Department of Botany

Lesson Plan for (CBCS General) for the Academic Session 2018-2019

Typ e	Paper	Unit	Topic	Learning Objectives	Related Questions	Teache	r Teaching Methods
				SEMESTER-I			
CC-I	DSC-1AT Biodiversity (Microbes, Algae, Fungi and Archegoniate)	1.	a) Viruses.	To know about Structure, Type and Economic importance of Viruses.	1. What is virion? 2. Give example DNA & RNA viruses	G.M.	Lecture
			b) Bacteria.	To Know About cell structure, Reproduction and economic importance	1.What is plasmid? 2. What is Mesosome? What is Gonophore?	P.M.	Lecture
		2. Alg	Algae	1. General knowledge about algae. 2. Classification of algae 3. Economic importance of algae	1.What is Thallus? 2. Example an algae which is rich in protein. 3. What is the importance of algae in medicine.	G.M.	Lecture
		3.	Fungi	1.To know about General characteristics of Fungi 2. Knowing reproduction and classification. 3. Knowledge about Nutrition. 4. To know about Symbiotic Associations of Lichens Mycorrhiza.	1. What are true Fungi? 2. Name two edible and poisonous mushroom. 3. What is dolipore septum?	P.M.	Lecture

		Laborate 12	4 Ta lua :	4 14/5-21 1:	D.1.4	Lastina
	4.	Introducti	1.To know	1. What is	P.M.	Lecture
		on to	about	Archegoniate?		
		Archegoni	Archegoniate.	2. Define		
		ate	2. Knowledge	Alternation of		
			about	generation.		
			Alternation of			
			generation.			
	5.	Bryophyte	1.Knowing	1. Why	P.M.	Lecture
		S	general	Bryophytes		
			characteristics	are calling		
			, classification	amphibian?		
			of Bryophytes	2. Write the		
			2. Knowledge	importance of		
			about	bryophytes.		
			Morphology,			
			anatomy, and			
			Reproduction			
			of Marchantia			
			and Funaria.			
			3. Know about			
			Ecological			
			importance of			
			bryophytes			
			(Sphagnum)			
	6.	Pteridophy	(Sphagnum) 1.Knowing	1.what is	G.M.	Lecture
	6.	Pteridophy tes		1.what is Heterospory?	G.M.	Lecture
	6.	1	1.Knowing		G.M.	Lecture
	6.	1	1.Knowing about Early	Heterospory?	G.M.	Lecture
	6.	1	1.Knowing about Early land plant	Heterospory? 2. What is the	G.M.	Lecture
	6.	1	1.Knowing about Early land plant 2. Knowing	Heterospory? 2. What is the importance of	G.M.	Lecture
	6.	1	1.Knowing about Early land plant 2. Knowing about Morphology,	Heterospory? 2. What is the importance of	G.M.	Lecture
	6.	1	1.Knowing about Early land plant 2. Knowing about	Heterospory? 2. What is the importance of	G.M.	Lecture
	6.	1	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction	Heterospory? 2. What is the importance of	G.M.	Lecture
	6.	1	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella,	Heterospory? 2. What is the importance of	G.M.	Lecture
	6.	1	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction	Heterospory? 2. What is the importance of	G.M.	Lecture
	6.	1	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris.	Heterospory? 2. What is the importance of	G.M.	Lecture
	6.	1	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and	Heterospory? 2. What is the importance of	G.M.	Lecture
	6.	1	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge	Heterospory? 2. What is the importance of	G.M.	Lecture
	6.	tes	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge about stelar	Heterospory? 2. What is the importance of	G.M.	Lecture
		1	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge about stelar evolution.	Heterospory? 2. What is the importance of Selaginella?		
		tes	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge about stelar evolution. 1. To know	Heterospory? 2. What is the importance of Selaginella?		
		tes	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge about stelar evolution. 1. To know General	Heterospory? 2. What is the importance of Selaginella? 1. What is Coralloid root? What is the		
		tes	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge about stelar evolution. 1. To know General characteristics of	Heterospory? 2. What is the importance of Selaginella? 1. What is Coralloid root? What is the importance of		
		tes	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge about stelar evolution. 1. To know General characteristics of gymnosperm.	Heterospory? 2. What is the importance of Selaginella? 1. What is Coralloid root? What is the		
		tes	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge about stelar evolution. 1. To know General characteristics of gymnosperm. 2. Knowing	Heterospory? 2. What is the importance of Selaginella? 1. What is Coralloid root? What is the importance of		
		tes	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge about stelar evolution. 1. To know General characteristics of gymnosperm. 2. Knowing about	Heterospory? 2. What is the importance of Selaginella? 1. What is Coralloid root? What is the importance of		
		tes	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge about stelar evolution. 1. To know General characteristics of gymnosperm. 2. Knowing about morphology,	Heterospory? 2. What is the importance of Selaginella? 1. What is Coralloid root? What is the importance of		
		tes	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge about stelar evolution. 1. To know General characteristics of gymnosperm. 2. Knowing about	Heterospory? 2. What is the importance of Selaginella? 1. What is Coralloid root? What is the importance of		

				of Cycas and Pinus. 3. Ecological and economical importance.			
В	SC-C1P iodiversity Microbes,	1.	Models of TMV- viruses	Knowing about Viruses	Draw structures and label its part.	G.M.	Demonstration
aı A	Ilgae, Fungi nd Irchegoniate Practical)	2.	Study of vegetative and reproducti ve structures of algae	Gain knowledge about reproductive structures of Nostoc, Oedogonium, Vaucheria	Write the identifying characters of vaucheria.	G.M.	Demonstration
		3.	Agaricus	Study about Sectioning of gills of Agaricus	Write the identifying characters of Agaricus and draw its fruit body with label.	P.M.	Demonstration
		4.	Selaginella	Know about morphology and strobilus of Selaginella.	Draw and label Strobilus of Selaginella.	P.M.	Demonstration
		5.	Pteris	Knowing about Morphology, rachis and spore of Pteris	Write the characteristics of Pteris.	G.M.	Demonstration

Type	Paper	Unit	Topic		Learning Objectives	Related Questions	Teacher	Teachin g Method s
			SEI	MESTER	R-11			
CC-II	DSC1B(C2T):	1.	Introduction	To kno	ow about	1.What is	P.M.	Lecture
	Plant Ecology			Ecolo	gy.	ecology?		
	and					2. who coined		
	Taxonomy					the name		
						ecology		

2.	Ecological factors	1.Knowing about Soil and its formation. 2. To know about soil profile. 3. Knowledge aboutStates of water in the environment, precipitation types. 4. KnowingLight and temperature 5. Know about Shelford law of tolerance. 6. Know about Adaptation of hydrophytes and xerophytes.	1.What is soil profile? 2.What is capillary water? 3. What is Shelford law? 4. Name two xerophytic plant.	P.M.	Lecture
3.	Plant communities	1.To know about Ecotone and edge effect 2.Knowledge about Succession, Processes and types.	1. What is ecotone and edge effect? 2. What is the pioneer of xerosere? 3. what is sere?	P.M.	Lecture
4.	Ecosystem	1. To know about ecosystem, energy flow trophic organization. 2. Knowing Food chains and food webs, Ecological pyramids. 3. To know production and productivity in ecosystem. 4. Knowledge about Biogeochemical cycling (carbon, nitrogen and Phosphorous	1. What is ecosystem? 2. Deference between food chain and food webs. 3. Define Biogeo-chemical cycle. 4. What is De nitrification.	P.M.	Lecture

			cycle).			
			cycle).			
	5.	Phytogeogra	1.To know the	Write the	P.M.	Lecture
		phy	principle of	definition of		
			biogeographical zone.	Endemism.		
			2. Knowing about			
			Endemism.			
	6.	Introduction	To know about	1. What is	P.M.	Lecture
		to plant	Identification,	Taxonomy?		
		Taxonomy	classification and	2. who coined		
			Nomenclature	the name taxonomy		
	7.	Identification	1. Knowledge	1. What is the	G.M.	Lecture
			about Herbarium.	Measurement		
			2. Knowing the	of Herbarium		
			Functions and	shit?		
			Important of herbarium and	2. Which is the		
			botanical gardens	largest Botanical		
			of the world and	Garden in		
			India	India and		
			3. Larne about	world.		
			Documentation	3. What is		
			Flora, Keys.	Flora?		
	8.	Taxonomic	To know about	1.What is	G.M.	Lecture
		evidences	Palynology,	Palynology?		
		from	cytology,	2. What is		
		palynology,	phytochemistry	cytology?		
		cytology,	and molecular			
		phytochemis try and	data			
		molecular				
		data				
		Taxonomic	1.Knowledge	1.What is	G.M.	Lecture
	9.	hierarchy	about Ranks,	Taxonomic		
			categories and taxonomic groups	hierarchy? 2. What is		
			taxonomic groups	Lineal		
				hierarchy?		
				3. What is		
				Rank?		

	10.	Botanical nomenclatur e	1. To know about Principles and rules of ICN. 2. Learn about binominal system. 3. Knowing about typification, author citation, valid publication, rejection of names, principle of priority and its limitations.	1.What is binomial nomenclature? 2. What is author citation and valid publication?	G.M.	Lecture
	11.	Classification	1.Knowing about Types of classification- artificial, natural and phylogenetic. 2. To learn Bentham and Hooker, Engler and Prantl classification	What is classification?	G.M.	Lecture
	12.	Biometrics, numerical taxonomy and cladistics	1. Know about Characters, variations, OTUs, 2. Knowledge about cluster analysis; 3. To learn phenograms, cladograms	1. What is OTUs? 2. Difference between Phenogram and Cladogram.	G.M.	Lecture
DSC1BP (Plant Ecology and Taxonomy)	1.	Study of morphologic al adaptations of hydrophytes and xerophytes.	Knowing about morphology of hydrophytes and xerophytes.	Anatomical and Physiological structural diagram of hydrophytes and xerophytes.	G.M.	Demons tration
	2.	Quantitative analysis of herbaceous vegetation in	Know about Raunkiaer's frequency distribution law.	Describe minimum size of Quadrate by Raunkiaer's	G.M.	Demons tration

	Alan e Illere		1		
	the college		law.		
	campus for				
	frequency				
	and				
	comparison				
	with				
	Raunkiaer's				
	frequency				
	distribution				
	law				
3.	Study of	To know about	Description	G.M.	Demons
	vegetative	floral diagram,	Floral diagram,		tration
	and floral	floral formula and	floral formula.		
	characters of	systematic			
	the following	position.			
	families				
	(Description,				
	V.S. flower,				
	section of				
	ovary, floral				
	diagram,				
	floral				
	formula and				
	systematic				
	position				
	according to				
	Bentham &				
	Hooker's				
	system of				
	classification				
):				
	Brassicaceae				
	- Brassica,				
	Asteraceae,V				
	ernonia,				
	Tridax;				
	Solanaceae -				
	Solanum				
	nigrum,				
	Lamiaceae -				
	Salvia,				

	4.	Mounting of	To know prepare	Submitted	G.M.	Lecture
		a properly	Herbarium.	herbarium		
		dried and		copy in the		
		pressed		record book.		
		specimen of				
		any wild				
		plant with				
		herbarium				
		label				

Under Graduate Syllabus (General) 3 Tier Examination Pattern

Туре	Paper	Section	Topic	Learning Objectives	Related Questions	Teacher	Teaching Methods
				Part- II			
	II. Theory	I.	a) Anatomy	1.Knowledge about ultra structure of Plant cell wall. 2. Knowing Composition and function of Tissue Meristamatic and Permanent. 3. Know about Stele, Definition, types with example. 4. Learn Normal Secondary growth in dicot stem. Stomatal types.	1.Write the composition of cell wall. 2. Deference between Meristemitic and permanent tissue 3. What is haplostele?		Lecture
			b) Ecology	1. Brief knowledge on biosphere and biome, ecotype, Climatic factors, Plant succession, Stages of succession like Xerosere and Hydrosere. 2. Know about Ecological adaptations of hydrophyte, halophyte and Xerophyte. 3. To know Carbon	1.What is Biome? 2. What is ecosystem? 3. What is succession? 4. Define algal bloom? 5. What is BOD & COD? 6.What is SPM?		Lecture

	<u> </u>			1	
	c) Ethno botany	and nitrogen cycle. 4. Knowledge about Air and water pollution: Causes and adverse effects. Give Concept of ethnobotany and significance of its study.	1.What is Ethno botany? 2. Write two significances of Ethno	P.M.	Lecture
	Cell biology & Genetics:	1.Knowing about Cell cycle with different phages of Mitosis and meiosis. 2.Learn about significance of Mitosis and miosis 3.Knowing Mendelism: Monohybrid and dihybrid cross, test cross, chromosomal basis of Mendelian inheritance. 4. Learn about allelic and non-allelic interactions. 5.Know about Linkage and Crossing over three-point test cross. 6.Give knowledge about Chromosome it's morphology, chemical constituents. DNA structure. 7. Knowledge about chromosomal abortion. 8. Learn about Gene mutation& genetic code.	of Ethno botany 1.Write two significance of miosis. 2.What is test cross? 3. What is crossing over? 4. Define Euploidy. 5. role of polyploidy in evolution.	G.M.	Lecture

			a) Plant Physiology	1.To know about Water relation, Osmotic pressure, turgor pressure, water potential, Ascent of sap. 2. Knowing about Transpiration and its significance, guttationandAntitran spirant. 3. knowing the role of Mineral nutrition 4. To know about Enzymestypes and its properties. 5. Brief knowledge about Photosynthesis, C4 and CAM pathway. 6. To learn about respiration and Nitrogen metabolism 7. Learn about Plant hormones and its role in plant growth and developments. 8. To know about Photoperiodism.	1.What is osmotic Pressure? 2. What is the significance of Transpiration 3. name two anti transpirant factor. 4. What is apo enzyme and coenzyme? 5.Write the role of auxin in agriculture.	P.M.	Lecture
			b) Biochemistry	Knowing about Carbohydrate, Proteins and Fats	1. Give example di and oligo saccharides. 2. What is secondary protein?	G.M.	Lecture
III. Pra	ctical	1.	Description and identification	Gaining knowledge about some microscopic specimen.	write the identifying characters of Volvox, Oedogonium, Mucor, Penicillium, Agaricus, Riccia, Funaria, Selaginella	P.M.	Demonstration

			and Pteris.		
2.	Morphology	Gaining knowledge about different types of stipules, inflorescences and fruits.	Describe inflorescence s of given plant.	P.M.	Demonstration
3.	Dissection, drawing, description of some angiospermic plants	To know about floral diagram, floral formula	Description Floral diagram, floral formula	G.M.	Demonstration
4.	Plant physiology experiments	1.Determination of the rate of oxygen evolution during photosynthesis. 2. Determination of the DPD with the help of storage tissue. 3. To determine the transpiration, pull of a twig of mesophytic plant.	1.Determine DPD from potato.	G.M.	Demonstration

Under Graduate Syllabus (General) 3 Tier Examination Pattern

Туре	Paper	Unit/Se ction	Topic	Learning Object	Related question	Teac her	Teaching Method s
				Part -III			

IV (A) (Theoretical)	1	Genetics, Plant Breeding and Biometry.	1. To learn about DNA replication, gene regulation. 2. Knowing about Mendelian laws: incomplete dominance, dominant epistatic 3. Brief idea of - Recombinant DNA, gene cloning, Transgenic plant.	1.What is central dogma? 2. Write law of segregation. 3. what is Recombinan t DNA? 4.Write two property of cloning vector.	P.M.	Lecture
			4. Knowledge about hybridization, Heterosis. 5.knowledge of pure line selection, mass selection and clonal selection. 6. Goodness off it (Chi-square test). 7.Learn about Plant tissue culture and Application of plant tissue culture in the improvement of crop plants.	1.Define Hybridizatio n and heterosis. 2.What is totipotency ? 3. What is tissue culture?	G.M	Lecture
	II	Medicinal plants, Floriculture, Plant protection, Plant propagation.	1.General knowledge about the cultivation and uses of medicinal plants. 2. to learn about classification of ornamental plants 3. Knowing the methods of cultivation and propagation of Rose, Tuberose and Jasmine. 4. Learn about Type	1.Name two medicinal plant and its uses. 2.What is stock and cion? 3. What is Grafting?	G.M.	Lecture

		III	Mushroom culture, Biofertilizer	of plant protection. 5. Knowledge about procedures for cutting, grafting, budding and layering with reference to economical plants. 1. Knowing Cultivation technique of mushrooms and its food value. 2. Give idea of production and applications of Rhizobium, BGA and Azolla.	1.Describe the food value of mushroom. 2. What is biofertilizer ? 3.Write significance	P.M.	Lecture
		IV	Seed preservatio n, Biodiversity	3. Knowing Significance of biofertilizers over chemical fertilizers. 1. Knowing General principle of seed storage; concept of modern techniques of seed storage. 2. Brief knowledge about Biodiversity, insitu and ex-situ conservation. 3. Learn the Methods of in-situ conservation	of bio fertilizer. 1.Whate is biodiversity? 2. Differentiat e between Ex-situ & insitu conservation	G.M.	Lecture
IV B (Pra	actical)	1.	Preparation of solutions	Learn to Preparation of Sucrose solutions Normal, Molar, Molal, Percentage	Describe the molar percentage of Sucrose.	P.M.	Demons tration
		2.	Identificati on of medicinal plants.	Knowing about medicinal plant and its importance.	Describe importance of medicinal plant	G.M.	Demons tration
		3.	Bacterial staining	Learn about Bacterial staining from curd.	Prepare a slide from curd and Identify gm Ve+ bacteria	P.M	Demons tration

	4.	Determinat	Know about goodness	Determinati	G.M.	Demons
		ion of	of fit of normal	on of		tration
		goodness	monohybrid ratios.	goodness of		
		of fit.		fit of		
				monohybrid		
				ratios (3: 1)		
				by Chi-		
				square		
				method.		

Lesson Plan for (CBCS General) for the Academic Session 2019-2020

Type	Paper	Uni t	Topic	Learning Objectives	Related Questions	Teache r	Teachin g Metho ds
		·	SEMEST	ER-I			
CC-I	DSC-1AT Biodiversity	1.	a) Viruses.	To know about Structure, Type and Economic importance of Viruses.	1. What is virion? 2. Give example DNA & RNA viruses	G.M.	Lectu re
			b) Bacteria	. To Know About cell structure, Reproduction and economic importance	1.What is plasmid? 2. What is Mesosome? What is Genophore?	P.M.	Lectu
		2.	Algae	1. General knowledge about algae. 2. Classification of algae 3. Economic importance of algae	1.What is Thallus? 2. Example an algae which is rich in protein. 3. What is the importance of algae in medicine.	G.M.	Lectu re

3.	Fungi	1.To know about General characteristics of Fungi 2. Knowing reproduction and classification. 3. Knowledge about Nutrition. 4. To know about Symbiotic Associations of Lichens Mycorrhiza.	1. What are true Fungi? 2. Name two edible and poisonous mushroom. 3. What is dolipore septum?	P.M.	Lectu
4.	Introductio n to Archegonia te	1.To know about Archegoniate. 2. Knowledge about Alternation of generation.	 What is Archegoniate ? Define Alternation of generation 	P.M.	Lectu re
5.	Bryophytes	1.Knowing general characteristics, classification of Bryophytes 2. Knowledge about Morphology, anatomy, and Reproduction of Marchantia and Funaria. 3. Know about Ecological importance of bryophytes (Sphagnum)	1. Why Bryophytes are calling amphibian? 2. Write the importance of bryophytes.	P.M.	Lectu
6.	Pteridophy tes	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge	1.what is Heterospory ? 2. What is the importance of Selaginella?	G.M.	Lectu re

			about stelar evolution.			
	7.	Gymnosper m	1. To know General characteristics of gymnosperm. 2. Knowing about morphology, anatomy and reproduction of Cycas and Pinus. 3. Ecological and economical importance.	1.What is Coralloid root? What is the importance of Gymnosperm	G.M.	Lectu
DSC-C1P Biodiversity (Microbes, Algae, Fungi and	1.	Models of TMV- viruses	Knowing about Viruses	Draw structures and label its part.	G.M.	Dem onstr ation
Archegoniate (Practical)	3.	Agaricus	Study about Sectioning of gills of Agaricus	Write the identifying characters of Agaricus and draw its fruit body with label.	P.M.	Dem onstr ation
	4.	Selaginella	Know about morphology and strobilus of Selaginella.	Draw and label Strobilus of Selaginella.	P.M.	Dem onstr ation
	5.	Pteris	Knowing about Morphology, rachis and spore of Pteris	Write the characteristic s of Pteris.	G.M.	Dem onstr ation

Type	Paper	Unit	Topic	Learning	Related	Teacher	Teachin
				Objectives	Questions		g
							Method
							S

			SEM	ESTER-II			
CC-II	DSC1B(C2T): Plant Ecology and Taxonomy	1.	Introduction	To know about Ecology.	1.What is ecology? 2. who coined the name ecology	S.M.	Lecture
		2.	Ecological factors	1.Knowing about Soil and its formation. 2. To know about soil profile. 3. Knowledge about States of water in the environment, precipitation types. 4. Knowing Light and temperature 5. Know about Shelford law of tolerance. 6. Know about Adaptation of hydrophytes and xerophytes.	1.What is soil profile? 2.What is capillary water? 3. What is Shelford law? 4. Name two xerophytic plant.	S.M.	Lecture
		3.	Plant communities	1.To know about Ecotone and edge effect 2.Knowledge about Succession, Processes and types.	1. What is ecotone and edge effect? 2. What is the pioneer of xerosere? 3. what is sere?	S.M.	Lecture
		4.	Ecosystem	1. To know about ecosystem, energy flow trophic organization. 2. Knowing Food chains and	1. What is ecosystem? 2. Deference between food chain and food webs. 3. Define Biogeo-chemical	S.M.	Lecture

1	1		T	1	T	
			food webs,	cycle.		
			Ecological	4. What is De		
			pyramids.	nitrification.		
			3.To know			
			production and			
			productivity in			
			ecosystem.			
			4. Knowledge			
			about			
			Biogeochemical			
			cycling (carbon,			
			nitrogen and			
			Phosphorous			
			cycle).			
	5.	Phytogeograp	1.To know the	Write the	S.M.	Lecture
		hy	principle of	definition of		
		'	biogeographical	Endemism.		
			zone.			
			2. Knowing			
			about			
			Endemism.			
	6.	Introduction	To know about	1. What is	S.M.	Lecture
	0.	to plant	Identification,	Taxonomy?	3.101.	Lecture
		· ·	classification	2. who coined		
		Taxonomy	and	the name		
		1-1	Nomenclature	taxonomy	C NA	1
	7.	Identification	1. Knowledge	1. What is the	G.M.	Lecture
			about	Measurement		
			Herbarium.	of Herbarium		
			2. Knowing the	shit?		
			Functions and	2. Which is the		
			Important of	largest		
			herbarium and	Botanical		
			botanical	Garden in		
			gardens of the	India and		
			world and India	world.		
			3. Larne about	3. What is		
			Documentation	Flora?		
			Flora, Keys.			
	8.	Taxonomic	To know about	1.What is	G.M.	Lecture
		evidences	Palynology,	Palynology?		
		from	cytology,	2. What is		
		palynology,	phytochemistry	cytology?		
		cytology,	and molecular			
		phytochemistr	data			
		y and				
		molecular data				
 1	1		l .	1	I	1

9.	Taxonomic hierarchy	1.Knowledge about Ranks, categories and taxonomic groups	1.What is Taxonomic hierarchy? 2. What is Lineal hierarchy? 3. What is Rank?	G.M.	Lecture
10.	Botanical nomenclature	1. To know about Principles and rules of ICN. 2. Learn about binominal system. 3. Knowing about typification, author citation, valid publication, rejection of names, principle of priority and its limitations.	1.What is binomial nomenclature? 2. What is author citation and valid publication?	G.M.	Lecture
11.	Classification	1.Knowing about Types of classification-artificial, natural and phylogenetic. 2. To learn Bentham and Hooker, Engler and Prantl classification	What is classification?	G.M.	Lecture
12.	Biometrics, numerical taxonomy and cladistics	1. Know about Characters, variations, OTUs, 2. Knowledge about cluster analysis; 3. To learn phenograms, cladograms	1. What is OTUs? 2. Difference between Phenogram and Cladogram.	G.M.	Lecture

DSC1BP (Plant Ecology and Taxonomy)	1.	Study of morphological adaptations of hydrophytes and xerophytes.	Knowing about morphology of hydrophytes and xerophytes.	Anatomical and Physiological structural diagram of hydrophytes and xerophytes.	G.M.	Demons tration
	2.	Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law	Know about Raunkiaer's frequency distribution law.	Describe minimum size of Quadrate by Raunkiaer's law.	G.M.	Demons tration
	3.	Study of vegetative and floral characters of the following families (Description, V.S. flower, section of ovary, floral diagram, floral formula and systematic position according to Bentham & Hooker's system of classification): Brassicaceae - Brassica, Asteraceae, Vernonia, Tridax; Solanaceae - Solanum nigrum,	To know about floral diagram, floral formula and systematic position.	Description Floral diagram, floral formula.	G.M.	Demons tration

	Liliaceae - Salvia,				
4.	Mounting of a properly dried and pressed specimen of any wild plant with herbarium label	To know prepare Herbarium.	Submitted herbarium copy in the record book.	G.M.	Lecture

Тур	Paper	Uni	Topic	Learning	Related	Teac	ch	Teaching
e		t		Objectives	Question	er		Methods
			SE	MESTER-III				
CC3	DSC-1CT Plant Anatomy and Embryology	2.	Meristematic and permanent tissues Organs	1.To knowing aboutRoot and shoot apical meristems. 2. Learn About Simple and complex tissues. Knowledge about Structure of dicot and	1.Deferencial to between Simple and Complex tissue 2. What is Root apex? Deference between monocot		i.M.	Lecture
				monocot root, stem and leaf.	and dicot root.			
		3.	Secondary Growth	1. General knowledge about Vascular cambium. 2. Know about Secondary growth in root and stem, Wood.	1.Write the function of vascular cambium. 2. What is Heart wood		i.M.	Lecture
		4.	Adaptive and protective systems	1.Gain Knowledge aboutAdaptive and Protective system of plant. 2. Knowing about adaptations in xerophytes and hydrophytes.	1.Write a note about stomata. 2. What is the function of epidermis?		.M.	Lecture

	т_	l c		I		
	5.	Structural organization of flower	1. Know about Structure of anther and pollen. 2. Knowing the types of ovules. 3. Learn about embryo sacs.		P.M.	Lecture
	6.	Pollination and fertilization	 Knowledge about Pollination and adaptations Brief Knowledge about Double fertilization. Learn about Seed dispersal mechanisms. 	1.What is pollination? 2. What is allogamy? 3. Deference between cross & selfpollination.	P.M.	Lecture
	7.	Embryo and endosperm	1. Knowledge about Endosperm 2. Learn about Dicot and monocot embryo.	1.What is embryo? 2. What is the Function of Endosperm?	G.M.	Lecture
	8.	Apomixis and polyembryon y	Gain knowledge about Apomixis and polyembryonyan dits practical applications.	1. What is polyembryon y. 2. Mention the application of polyembryon y	P.M.	Lecture
DSC1CP: Plant Anatomy and Embryology (Practical)	1.	Study of meristems through permanent slides	Gain knowledge about Meristem.	Write about meristem.	G.M.	Demonst ration
	2.	Stem	Learn about monocot stem.	Write characters of monocot stem.	P.M.	Demonst ration
	3.	Adaptive anatomy of Xerophyte	Learn about Xerophytic and Hydrophyt	Write the Xerophytic adaptation	G.M.	Demonst ration

		and Hydrophyte	Adaptation.	of Hydrilla.		
	4.	Types of ovules.	Know about Ovules of various types.	Describe anatropous and camphylotro pous ovules.	G.M.	Demonst ration
SEC-1: Bio- fertilizers	1.	General account about the microbes used as bio fertilizer (Rhizobium)	Learn about Microbes used in bio fertilizer.	1.How isolat Rhizobium? 2. Write uses of Bio fertilizer	G.M.	Lecture
	2.	Azospirillum Azotobacter	1. Know to isolation of Azospirillum. 2. Learn about Azotobactor it's characteristic and cropresponse.	1. What is crop response of Azotobactor ?	G.M.	Lecture
	3.	Cyanobacteri a (blue green algae), Azolla and Anabaena	1. Knowing about Cyanobacteria, Azola and Anabaena 2. Know about Nitrogen fixation by Azolla. 3. Learn about the function of blue green algae & azolla in cultivation of rice.	1. What areCyanobac teria? 2. How nitrogen fixed by blue green algae? 3. Write the role of azolla in rice cultivation.	P.M.	Lecture
	5.	Mycorrhizal association, VAM — isolation and inoculum production of VAM, and its influence on growth and yield of crop plants.	1. Learn about Mycoriza,VAM. 2. Knowing VAM to influence on growth and yield of crop plants.	1.What is VAM? 2. Write the function of VAM in crop plant.	P.M.	Lecture

6.	Organic	1.Knowing about	1.What is	G.M.	Lecture
	farming	organic farming.	organic		
	green	2. Learn about	farming?		
	manuring and	organic	2. How		
	organic	Fertilizer.	recycle		
	fertilizers,	3. Knowing	biodegradabl		
	Recycling of	about Recycling	e wastes?		
	biodegradabl	of biodegradable	3. Write the		
	e municipal,	wastes.	application		
	agricultural	4. Learn to	of		
	and Industrial	making of	vermicompo		
	wastes – bio	vermicompost	st?		
	compost	and its used.			
	making				
	methods,				
	types and				
	method of				
	vermicompos				
	ting – field				
	Application.				

Type	Paper	Unit	Topic	Learning Objectives	Related Questions	Teacher	Teachin g Method s
				SEMESTER-IV			
CC-4	DSC1D T(C4T) : Plant Physiol ogy and Metab olism	1.	Plant-water relations	1.Knowing about Importance of water, water potential and its components 2. Get knowledge about Transpiration and its significance. 3. Know about Factors affecting transpiration. 4. Knowledge about Root pressure and guttation.	1. Write importance of water in leaving organs. 2. What is the significance of transpiration in plant? 3. Deference between Transpiration & guttation	G.M.	Lecture
		2.	Mineral nutrition	 Learn about Essential elements, macro and micronutrients. Knowing Role of 	1.Define micro and macro nutrients with example. 2. Describe the	S.M.	Lecture

	
essential elements. role of	
3. Get knowledge essential	
about Transport of elements in	
ions across cell plant.	
membrane 3. Deference	
4. Learn about active between	
and passive active	
transport. andpassive	
transport.	
3. Translocation in 1. Knowing about 1. What is G.M.	Lecture
phloem Composition of Phloem sap?	Lecture
phloem sap. 2. Define	
flow model. pathway?	
3. Get knowledge	
about Phloem	
loading and	
unloading	
4. Photosynthesis 1. Knowing 1. Define G.M.	Lecture
Photosynthetic Photosynthesi	
Pigments (Chl a, b, s.	
xanthophylls, 2. What are	
carotene). antenna	
2. Get knowledge molecules?	
about Photosystem I 3. Describe	
and II, reaction ATP synthesis.	
center, antenna 4. Write about	
4. Knowing Electron	
transport and	
mechanism of ATP	
synthesis.	
4. Knowledge about	
C3, C4 and CAM	
pathways of carbon	
fixation.	
5. Learn about	
Photorespiration.	
5. Respiration 1. Know about 1. What is G.M.	Lecture
Glycolysis, anaerobic Glycolysis?	
respiration, TCA 2. Write a	
cycle short note of	
cycle. short note of	
2. Knowledge about TCA cycle.	
2. Knowledge about TCA cycle. Oxidative 3. What is	
2. Knowledge about TCA cycle. Oxidative 3. What is phosphorylation, PPP?	
2. Knowledge about CA cycle. Oxidative 3. What is phosphorylation, Glyoxylate.	
2. Knowledge about TCA cycle. Oxidative 3. What is phosphorylation, PPP?	

			Phosphate Pathway.			
	6.	Enzymes	1.Learn about Structure and properties of enzyme. 2. Mechanism of enzyme catalysis and enzyme inhibition.	1.	S.M.	Lecture
	7.	Nitrogen metabolism	Know about Biological nitrogen fixation.	1.What is Nef gen and nod gene? 2. Name two nitrogen fixing bacteria. 3. What is ammonificatio n?	G.M.	Lecture
	8.	Plant growth regulators	Learn about Discovery and physiological roles of auxins, gibberellins, cytokinin, ABA, ethylene.	1.What is PGRs? 2. Write the role of ABA in stress condition in plant. 3. what is triple response	S.M.	Lecture
	9.	Plant response to light and temperature	1.Learn about Photoperiodism. 2.Knoledge about Phytochromeand Vernalization.	1. What is vernalization? 2. Describe phytochrome. 3. What is SDP?	S.M.	Lecture
DSC- 1DP- Plant Physiol ogy and		Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte.	Knowledge about Stomatal Index and it's frequency.	Calculate stomatal Index of a mesophyte plant.	G.M.	Demons tration
Metab olism (Practi	2.	Demonstration of Hill reaction	Learn about Hill Reaction.	Demonstratio n of Hill reaction.	P.M.	Demons tration

cal)	3.	Effect of auxins on rooting.	Know about auxin as PGRs	Demonstratio n of rootin	G.M.	Demons tration
	4.	Determination of osmotic potential of plant cell sap by plasmolytic method.	Knowing about Plasmolytic Methods.	Determination of osmotic potential of plant cell sap by plasmolytic method.	P.M.	Demons tration
	5.	R.Q.	Knowing about R.Q.	Demonstratio n of R.Q.	P.M.	Demons tratio
SEC3T Floricu Iture	1.	Introduction	Know about gardening, Importance and scope of floriculture		G.M	Lecture
	2.	Nursery Management and Routine Garden Operations	1.Learn about Sexual and vegetative methods of propagation. 2. knowing Soil sterilization, Seed sowing, Planting and Mulching. 3. Gain knowledge about Role of plant growth regulators.		S.M.	Lecture
	3.	Ornamental Plants	1. Learn about ornamental trees, Ornamental bulbous and foliage plants. 2. Knowing Cultivation of plants in pots; Indoor gardening; Bonsai.	1. Write two names of succulent plant. 2. What is ornamental tree?	S.M	Lecture
	4.	Principles of Garden Designs	1.Gain knowledge about English, Italian, French, Persian, Mughal and Japanese gardens; Features of a garden. 2. Know about Some Famous gardens of India.	1.Describe about Flower beds. 2. Named some famous garden in India.	S.M.	Lecture
	5.	Landscaping Places of Public Importance	Learn about Landscaping highways and educational institutions.		G.M.	Lecture

6.	Commercial Floriculture	1. Learn the Factors affecting flower production. 2. Know about Production and packaging of cut flowers; Flower arrangements; Methods to prolong vase life. 3. Get knowledge about Cultivation of Important cut flowers.	1 How Gerbera and Aster are cultivated? 2. How factors are affecting on flowering plant?	G.M.	Lecture
7.	Diseases and Pests of	Know about ornamental plant		G.M.	Lecture
	Ornamental	Diseases and its			
	Plants.	pests.			

Under Graduate Syllabus (General) 3 Tier Examination Pattern

Туре	Paper	Unit/Se ction	Topic	Learning Object	Related question	Teac her	Teaching Method s
				Part -III			
	IV (A) (Theoretical)	I	Genetics, Plant Breeding and Biometry.	1. To learn about DNA replication, gene regulation. 2. Knowing about Mendelian laws: incomplete dominance, dominant epistatic 3. Brief idea of - Recombinant DNA, gene cloning, Transgenic plant.	1.What is central dogma? 2. Write law of segregation. 3. what is Recombinan t DNA? 4.Write two property of cloning vector.	P.M.	Lecture

		4. Knowledge about	1.Define	G.M	Lecture
		hybridization,	Hybridizatio		
		Heterosis.	n and		
		5.knowledge of pure	heterosis.		
		line selection, mass	2.What is		
		selection and clonal	totipotency		
		selection.	?		
		6. Goodness off it	3. What is		
		(Chi-square test).	tissue		
		7.Learn about Plant	culture?		
		tissue culture and			
		Application of plant			
		tissue culture in the			
		improvement of crop			
	Medicinal	plants. 1.General knowledge	1.Name two	G.M.	Lecture
"	plants,	about the cultivation	medicinal	G.IVI.	Lecture
	Floriculture	and uses of medicinal	plant and its		
	, Plant	plants.	uses.		
	protection,	2. to learn about	2.What is		
	Plant	classification of	stock and		
	propagatio	ornamental plants	cion?		
	n.	3. Knowing the	3. What is		
		methods of	Grafting?		
		cultivation and			
		propagation of Rose,			
		Tuberose and			
		Jasmine.			
		4. Learn about Type			
		of plant protection.			
		5. Knowledge about			
		procedures for			
		cutting, grafting,			
		budding and layering			
		with reference to			
l III	Mushroom	economical plants. 1.Knowing Cultivation	1.Describe	P.M.	Lecture
""		technique of	the food	P.IVI.	Lecture
	culture, Biofertilizer	mushrooms and its	value of		
	Diolei tilizel	food value.	mushroom.		
		2. Give idea of	2. What is		
		production and	biofertilizer		
		applications	?		
		ofRhizobium, BGA	3.Write		
		and Azolla.	significance		
		3. Knowing	of bio		
	1	_	fo:1:	I	
		Significance of	fertilizer.		

			chemical fertilizers.			
	IV	Seed preservatio n, Biodiversity	1.Knowing General principle of seed storage; concept of modern techniques of seed storage. 2. Brief knowledge about Biodiversity, insitu and ex-situ conservation. 3. Learn the Methods of in-situ conservation of threatened plants	1.Whate is biodiversity? 2. Differentiat e between Ex-situ & insitu conservation	G.M.	Lecture
IV B (Practical)	1.	Preparation of solutions	Learn to Preparation of Sucrose solutions Normal, Molar, Molal, Percentage	Describe the molar percentage of Sucrose.	P.M.	Demons tration
	2.	Identificati on of medicinal plants.	Knowing about medicinal plant and its importance.	Describe importance of medicinal plant	G.M.	Demons tration
	3.	Bacterial staining	Learn about Bacterial staining from curd.	Prepare a slide from curd and Identify gm Ve+ bacteria	S.M	Demons tration
	4.	Determinat ion of goodness of fit.	Know about goodness of fit of normal monohybrid ratios.	Determinati on of goodness of fit of monohybrid ratios (3: 1) by Chi- square method.	G.M.	Demons tration

Lesson Plan for (CBCS General) for the Academic Session 2020-2021

Тур	Paper	Uni	Topic	Learning Objectives	Related	Teache	Teachin
e		t			Questions	r	g
							Metho
							ds

			SEMEST	ER-I			
CC-I	DSC-1AT Biodiversity	1.	a) Viruses.	To know about Structure, Type and Economic importance of Viruses.	1. What is virion? 2. Give example DNA & RNA viruses	G.M.	Lectu
			b) Bacteria.	To Know About cell structure, Reproduction and economic importance	1.What is plasmid? 2. What is Mesosome? What is Genophore?	S.M.	Lectu re
		2.	Algae	1. General knowledge about algae. 2. Classification of algae 3. Economic importance of algae	1.What is Thallus? 2. Example an algae which is rich in protein. 3. What is the importance of algae in medicine.	G.M.	Lectu
		3.	Fungi	1.To know about General characteristics of Fungi 2. Knowing reproduction and classification. 3. Knowledge about Nutrition. 4. To know about Symbiotic Associations of Lichens Mycorrhiza.	1. What are true Fungi? 2. Name two edible and poisonous mushroom. 3. What is dolipore septum?	S.M.	Lectu
		4.	Introductio n to Archegonia te	1.To know about Archegoniate. 2. Knowledge about Alternation of generation.	1. What is Archegoniate ? 2 Define Alternation of generation	S.M.	Lectu re

	5.	Bryophytes	1.Knowing general characteristics, classification of Bryophytes 2. Knowledge about Morphology, anatomy, and Reproduction of Marchantia and Funaria. 3. Know about Ecological importance of	1. Why Bryophytes are calling amphibian? 2. Write the importance of bryophytes.	S.M.	Lectu
	6.	Pteridophy tes	bryophytes (Sphagnum) 1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge about stelar evolution.	1.what is Heterospory ? 2. What is the importance of Selaginella?	G.M.	Lectu re
	7.	Gymnosper m	1. To know General characteristics of gymnosperm. 2. Knowing about morphology, anatomy and reproduction of Cycas and Pinus. 3. Ecological and economical importance.	1.What is Coralloid root? What is the importance of Gymnosperm	G.M.	Lectu re
DSC-C1P Biodiversity (Microbes, Algae, Fungi and Archegoniate	1.	Models of TMV- viruses	Knowing about Viruses	Draw structures and label its part.	G.M.	Dem onstr ation

(Practical)						
	2.	Study of vegetative and reproductive structures of algae	Gain knowledge about reproductive structures of Nostoc, Oedogonium, Vaucheria	Write the identifying characters of vaucheria.	G.M.	Dem onstr ation
	3.	Agaricus	Study about Sectioning of gills of Agaricus	Write the identifying characters of Agaricus and draw its fruit body with label.	S.M.	Dem onstr ation
	4.	Selaginella	Know about morphology and strobilus of Selaginella.	Draw and label Strobilus of Selaginella.	S.M.	Dem onstr ation
	5.	Pteris	Knowing about Morphology, rachis and spore of Pteris	Write the characteristic s of Pteris.	G.M.	Dem onstr ation

Type	Paper	Unit	Topic	Learning Objectives	Related Questions	Teacher	Teachin g Method
							S
			SEMI	ESTER-II			
CC-II	DSC1B(C2T): Plant Ecology and Taxonomy	1.	Introduction	To know about Ecology.	1.What is ecology? 2. who coined the name ecology	S.M.	Lecture

	1	Facilitation	4 1/2 2 1 1 1	4 14/5 - 1 1 - 11	C N 4	Last
	2.	Ecological	1.Knowing	1.What is soil	S.M.	Lecture
		factors	about	profile?		
			Soil and its	2.What is		
			formation.	capillary		
			2. To know	water?		
			about soil	3. What is		
			profile.	Shelford law?		
			3. Knowledge	4. Name two		
			about States of	xerophytic		
			water in the	plant.		
			environment,			
			precipitation			
			types.			
			4. Knowing Light			
			and			
			temperature			
			5. Know about			
			Shelford law of			
			tolerance.			
			6. Know about			
			Adaptation of			
			hydrophytes			
			and xerophytes.			
	3.	Plant	1.To know	1. What is	S.M.	Lecture
		communities	about Ecotone	ecotone and		
			and edge effect	edge effect?		
			2.Knowledge	2. What is the		
			about	pioneer of		
			Succession,	xerosere?		
			Processes and	3. what is		
			types.	sere?		
	4.	Ecosystem	1. To know	1. What is	S.M.	Lecture
			about	ecosystem?		
			ecosystem,	2. Deference		
			energy flow	between food		
			trophic	chain and food		
			organization.	webs.		
			2. Knowing	3. Define Bio-		
			Food chains and	geo-chemical		
			food webs,	cycle.		
			Ecological	4. What is De		
			pyramids.	nitrification.		
			3.To know			
			production and			
			productivity in			
			ecosystem.			
			4. Knowledge			
			about			
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		Biogeochemical cycling (carbon, nitrogen and Phosphorous cycle).			
5.	Phytogeograp hy	1.To know the principle of biogeographical zone. 2. Knowing about Endemism.	Write the definition of Endemism.	S.M.	Lecture
6.	Introduction to plant Taxonomy	To know about Identification, classification and Nomenclature	1. What is Taxonomy? 2. who coined the name taxonomy	S.M.	Lecture
7.	Identification	1. Knowledge about Herbarium. 2. Knowing the Functions and Important of herbarium and botanical gardens of the world and India 3. Larne about Documentation Flora, Keys.	1. What is the Measurement of Herbarium shit? 2. Which is the largest Botanical Garden in India and world. 3. What is Flora?	G.M.	Lecture
8.	Taxonomic evidences from palynology, cytology, phytochemistr y and molecular data	To know about Palynology, cytology, phytochemistry and molecular data	1.What is Palynology? 2. What is cytology?	G.M.	Lecture
9.	Taxonomic hierarchy	1.Knowledge about Ranks, categories and taxonomic groups	1.What is Taxonomic hierarchy? 2. What is Lineal hierarchy? 3. What is Rank?	G.M.	Lecture

10.	Botanical nomenclature	1. To know about Principles and rules of ICN. 2. Learn about binominal system. 3. Knowing about typification,	1.What is binomial nomenclature? 2. What is author citation and valid publication?	G.M.	Lecture
11.	Classification	author citation, valid publication, rejection of names, principle of priority and its limitations. 1.Knowing	What is	G.M.	Lecture
		about Types of classification-artificial, natural and phylogenetic. 2. To learn Bentham and Hooker, Engler and Prantl classification	classification?		
12.	Biometrics, numerical taxonomy and cladistics	1. Know about Characters, variations, OTUs, 2. Knowledge about cluster analysis; 3. To learn phenograms, cladograms	1. What is OTUs? 2. Difference between Phenogram and Cladogram.	G.M.	Lecture

DSC1BP (Plant Ecology and Taxonomy)	1.	Study of morphological adaptations of hydrophytes and xerophytes.	Knowing about morphology of hydrophytes and xerophytes.	Anatomical and Physiological structural diagram of hydrophytes and xerophytes.	G.M.	Demons tration
	2.	Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law	Know about Raunkiaer's frequency distribution law.	Describe minimum size of Quadrate by Raunkiaer's law.	G.M.	Demons tration
	3.	Study of vegetative and floral characters of the following families (Description, V.S. flower, section of ovary, floral diagram, floral formula and systematic position according to Bentham & Hooker's system of classification): Brassicaceae - Brassica, Asteraceae, Vernonia, Tridax; Solanaceae - Solanum nigrum,	To know about floral diagram, floral formula and systematic position.	Description Floral diagram, floral formula.	G.M.	Demons

	Liliaceae - Salvia,				
4.	Mounting of a properly dried and pressed specimen of any wild plant with herbarium label	To know prepare Herbarium.	Submitted herbarium copy in the record book.	G.M.	Lecture

Тур	Paper	Uni	Topic	Learning	Related	Teach	Teaching
е		t		Objectives	Question	er	Methods
			SE	MESTER-III			
CC3	DSC-1CT Plant Anatomy and Embryology	1.	Meristematic and permanent tissues	1.To knowing about Root and shoot apical meristems. 2. Learn About Simple and complex tissues.	1.Deferencial to between Simple and Complex tissue 2. What is Root apex?		
		2.	Organs	Knowledge about Structure of dicot and monocot root, stem and leaf.		G.M.	Lecture
			Secondary Growth	1. General knowledge about Vascular cambium. 2. Know about Secondary growth in root and stem, Wood.	1.Write the function of vascular cambium. 2. What is Heart wood	G.M.	Lecture
		4.	Adaptive and protective systems	1.Gain Knowledge about Adaptive and Protective system of plant. 2. Knowing about adaptations in xerophytes and hydrophytes.	1.Write a note about stomata. 2. What is the function of epidermis?	S.M.	Lecture

Г	Τ_	Ta	1			T
	5.	Structural organization of flower	1. Know about Structure of anther and pollen. 2. Knowing the types of ovules. 3. Learn about embryo sacs.		S.M.	Lecture
	6.	Pollination and fertilization	 Knowledge about Pollination and adaptations Brief Knowledge about Double fertilization. Learn about Seed dispersal mechanisms. 	1.What is pollination? 2. What is allogamy? 3. Deference between cross & selfpollination.	S.M.	Lecture
	7.	Embryo and endosperm	1. Knowledge about Endosperm 2. Learn about Dicot and monocot embryo.	1.What is embryo? 2. What is the Function of Endosperm?	G.M.	Lecture
	8.	Apomixis and polyembryon y	Gain knowledge about Apomixis and polyembryonyan dits practical applications.	1. What is polyembryon y. 2. Mention the application of polyembryon y	S.M.	Lecture
DSC1CP: Plant Anatomy and Embryology (Practical)	1.	Study of meristems through permanent slides	Gain knowledge about Meristem.	Write about meristem.	G.M.	Demonst ration
	2.	Stem	Learn about monocot stem.	Write characters of monocot stem.	S.M.	Demonst ration
	3.	Adaptive anatomy of Xerophyte	Learn about Xerophytic and Hydrophyt	Write the Xerophytic adaptation	G.M.	Demonst ration

		and Hydrophyte	Adaptation.	of Hydrilla.		
	4.	Types of ovules:	Know about Ovules of various types.	Describe anatropous and camphylotro pous ovules.	G.M.	Demonst ration
SEC-1: Bio- fertilizers	1.	General account about the microbes used as bio fertilizer (Rhizobium)	Learn about Microbes used in bio fertilizer.	1. How isolat Rhizobium? 2. Write uses of Bio fertilizer	G.M.	Lecture
	2.	Azospirillum Azotobacter	1. Know to isolation of Azospirillum. 2. Learn about Azotobactor it's characteristic and crop response.	1. What is crop response of Azotobactor ?	G.M.	Lecture
	3.	Cyanobacteri a (blue green algae), Azolla and Anabaena	1. Knowing about Cyanobacteria, Azola and Anabaena 2. Know about Nitrogen fixation by Azolla. 3. Learn about the function of blue green algae & azolla in cultivation of rice.	1. What are Cyanobacteri a? 2. How nitrogen fixed by blue green algae? 3. Write the role of azolla in rice cultivation.	S.M.	Lecture
	5.	Mycorrhizal association, VAM – isolation and inoculum production of VAM, and its influence on growth and yield of crop plants.	1. Learn about Mycoriza,VAM. 2. Knowing VAM to influence on growth and yield of crop plants.	1.What is VAM? 2. Write the function of VAM in crop plant.	S.M.	Lecture

6.	Organic	1. Knowing	1.What is	G.M.	Lecture
	farming	about organic	organic		
	green	farming.	farming?		
	manuring and	2. Learn about	2. How		
	organic	organic	recycle		
	fertilizers,	Fertilizer.	biodegradabl		
	Recycling of	3. Knowing	e wastes?		
	biodegradabl	about Recycling	3. Write the		
	e municipal,	of biodegradable	application		
	agricultural	wastes.	of		
	and Industrial	4. Learn to	vermicompo		
	wastes –	making of	st?		
	biocompost	vermicompost			
	making	and its used.			
	methods,				
	types and				
	method of				
	vermicompos				
	ting – field				
	Application.				

Type	Paper	Unit	Topic	Learning Objectives	Related Questions	Teacher	Teachin g Method s			
	SEMESTER-IV									
CC-4	DSC1D T(C4T) : Plant Physiol ogy and Metab olism	1.	Plant-water relations	1.Knowing about Importance of water, water potential and its components 2. Get knowledge about Transpiration and its significance. 3. Know about Factors affecting transpiration. 4. Knowledge about Root pressure and guttation.	1. Write importance of water in leaving organs. 2. What is the significance of transpiration in plant? 3. Deference between Transpiration & guttation	G.M.	Lecture			
		2.	Mineral nutrition	 Learn about Essential elements, macro and micronutrients. Knowing Role of 	1.Define micro and macro nutrients with example. 2. Describe the	S.M.	Lecture			

			occontial alarmants	role of		
			essential elements.			
			3. Get knowledge	essential		
			about Transport of	elements in		
			ions across cell	plant.		
			membrane	3. Deference		
			4. Learn about active	between		
			and passive	active and		
			transport.	passive		
				transport.		
	3.	Translocation in	1. Knowing about	1.What is	G.M.	Lecture
		phloem	Composition of	Phloem sap?		
		F	phloem sap.	2. Define		
			2. To know Pressure	apoplast		
			flow model.	pathway?		
			3. Get knowledge	patriway:		
			about Phloem			
			loading and			
			unloading	-		
	4.	Photosynthesis	1. Knowing	1. Define	G.M.	Lecture
			Photosynthetic	Photosynthesi		
			Pigments (Chl a, b,	S.		
			xanthophylls,	2. What are		
			carotene).	antenna		
			2. Get knowledge	molecules?		
			about Photosystem I	3. Describe		
			and II, reaction	ATP synthesis.		
			center, antenna	4. Write about		
			molecules.	CAM pathway.		
			4. Knowing Electron	CAIVI patriway.		
			transport and			
			•			
			mechanism of ATP			
			mechanism of ATP synthesis.			
			mechanism of ATP synthesis. 4. Knowledge about			
			mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM			
			mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon			
			mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM			
			mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon			
			mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation.			
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about	1. What is	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about		G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic	Glycolysis?	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA	Glycolysis? 2. Write a	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA cycle.	Glycolysis? 2. Write a short note of	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA cycle. 2. Knowledge about	Glycolysis? 2. Write a short note of TCA cycle.	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA cycle. 2. Knowledge about Oxidative	Glycolysis? 2. Write a short note of TCA cycle. 3. What is	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA cycle. 2. Knowledge about Oxidative phosphorylation,	Glycolysis? 2. Write a short note of TCA cycle.	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA cycle. 2. Knowledge about Oxidative phosphorylation, Glyoxylate.	Glycolysis? 2. Write a short note of TCA cycle. 3. What is	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA cycle. 2. Knowledge about Oxidative phosphorylation,	Glycolysis? 2. Write a short note of TCA cycle. 3. What is	G.M.	Lecture

			Phosphate Pathway.			
	6.	Enzymes	1.Learn about Structure and properties of enzyme. 2. Mechanism of enzyme catalysis and enzyme inhibition.	1.	S.M.	Lecture
	7.	Nitrogen metabolism	Know about Biological nitrogen fixation.	1.What is Nef gen and nod gene? 2. Name two nitrogen fixing bacteria. 3. What is ammonificatio n?	G.M.	Lecture
	8.	Plant growth regulators	Learn about Discovery and physiological roles of auxins, gibberellins, cytokinin, ABA, ethylene.	1.What is PGRs? 2. Write the role of ABA in stress condition in plant. 3. what is triple response	S.M.	Lecture
	9.	Plant response to light and temperature	1.Learn about Photoperiodism. 2.Knoledge about Phytochromeand Vernalization.	 What is vernalization? Describe phytochrome. What is SDP? 	S.M.	Lecture
DSC- 1DP- Plant Physiol ogy and	1.	Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte.	Knowledge about Stomatal Index and it's frequency.	Calculate stomatal Index of a mesophyte plant.	G.M.	Demons tration
Metab olism (Practi	2.	Demonstration of Hill reaction	Learn about Hill Reaction.	Demonstratio n of Hill reaction.	P.M.	Demons tration

cal)	3.	Effect of auxins	Know about auxin as	Demonstratio	G.M.	Demons
		on rooting.	PGRs	n of rooting		tration
	4.	Determination	Knowing about	Determination	P.M.	Demons
		of osmotic	Plasmolytic	of osmotic		tration
		potential of	Methods.	potential of		
		plant cell sap by		plant cell sap		
		plasmolytic		by plasmolytic		
		method.		method.		
	5.	R.Q.	Knowing about R.Q.	Demonstratio	P.M.	Demons
				n of R.Q.		tratio
SEC2T:	1.	Introduction	1.To know	1. How to	G.M	Lecture
Mushr			Nutritional and	defer		
oom			medicinal value of	poisonous		
Cultur			edible mushrooms.	mushroom		
е			2. Learn about	from edible		
Techn			Poisonous	one?		
ology			mushrooms.	2. Describe the		
0,			3. Get knowledge	nutritional		
			about types of edible	value of		
			mushrooms available	mushroom		
			in India.			
	2.	Cultivation	1. Learn about	Write a note	G.M.	Lecture
		Technology	Cultivation	about		
			technology.	preparation of		
			2. Learn about	mushroom		
			Mushroom bed	bed.		
			preparation.			
	3.	Storage and	1. Gain knowledge	1.How we	G.M.	Lecture
		nutrition	about Short-term	store for long		
			storage and long-	time?		
			term Storage.	2. Write		
			2. Know about the	nutritional		
			nutritional value of	value of		
			mushroom.	mushroom.		
	4.	Food	1. Gain knowledge	Which tipes of	G.M.	Lecture
		Preparation	about Types of foods	food prepared		
			prepared from	from		
			mushroom.	mushroom?		
			2. learn Research			
			Centers - National			
			level and regional			
			level.			
			3. Knowing the			
			Marketing in India			
			and abroad, Export			
			Value.			
	l	l	value.			

Туре	Paper	Uni t	Topic	Learning Objectives	Related Questions	Teacher	Teaching Methods
				SEMISTER-V			
S.M. DSE1T: Econo mic Botany and Biotec	1.	Origin of Cultivated Plants	1.Gain Concept of centers of origin. 2. Know their importance with reference to Vavilov's work	Mention the concept of 'Vavilov center of crop origin'	G.M.	Lecture	
	hnolog y	2.	Cereals	Know about Wheat & its Origin, morphology,uses.	 What are cereals? Write the uses of wheat. 	G.M	Lecture
		3.	Legumes	Gain knowledge with special reference to Gram and soybean	 Give note about Gram. Write the scientific name of soybean 	G.M.	Lecture
		4.	Spices	Learn about clove and black pepper.	1.Write the scientific name and family of clove. 2. Write the uses of black pepper	G.M.	Lecture
		5.	Beverages	Know about morphology, processing and uses of tea	1.What is Oolong tea? 2. Discuss the processing of tea	G.M.	Lecture
		6.	Oils and Fats	Learn about groundnut	1.Write down the botanical name of groundnut. 2. Discuss uses of groundnut.	G.M.	Lecture
		7.	Fibre Yielding Plants	Gain knowledge about Botanical name, family, part used, morphology and uses of cotton.	Write down the Family of Cotton. 2. Mention the uses of cotton in daily life of human beings.	G.M.	Lecture
		8.	Introductio n to biotechnol ogy	Knowing about biotechnology and its significance.	1.What is biotechnology? 2. Write the uses of biotechnology.	S.M.	Lecture
		9.	Plant tissue culture	Gain knowledge about Micropropagation.	1.What is micropropagation? 2. Write the	S.M.	Lecture

	1	1		T	1	
	10.	Recombina nt DNA Techniques	2. Knowing about haploid production through androgenesis and gynogenesis 3. Learn to brief account of embryo & endosperm culture with their applications 1. Knowing about Blotting techniques. 2. Learn about DNA Fingerprinting. 3. Gain knowledge about molecular DNA markers i.e. RAPD, RFLP, SNPs.	advantage of micropropagation. 3. What is Totipotency? 1.Write down a note of Northern blotting. 2. Describe the significance of DNA Fingerprinting. 3. What is DNA marker? 4. Write the full form	S.M.	Lecture
			4. Learn about PCR and Reverse Transcriptase-PCR. Hybridoma and monoclonal antibodies, ELISA. 5. Human gene Therapy.	of RAPD. 5. What is PCR,write it's use. 6.Briefly describe about Humen genTherapy.		
DSE1P: Econo mic Botany and Biotec hnolog	1.	Study of economical ly important plants	Know about Wheat, Gram, Soybean, Black pepper, Clove Tea, Cotton, Groundnut through specimens, sections and microchemical tests		G.M.	Demons tration
(Practi cal)	2.	Familiarizat ion with basic equipment s in tissue culture	Learn about tissue culture	Describe tissue culture with basic equipment.	G.M.	Demons tration
	3.	Study through photograph s	Knowing about Anther culture, somatic embryogenesis, endosperm and embryo culture; micropropagation	Describe Anther culture with suitable diagram.	S.M.	Demons tration

		4.	Study of	Learn about PCR,		S.M.	Demons
			molecular	Blotting techniques,			tration
			techniques	AGE and PAGE.			
	EC3T	1.	Introductio	Know about	1.What is	G.M	Lecture
	oricul		n	gardening,	floriculture?		
tu	ire			Importance and	2. Write down its		
	-	<u> </u>	Numaami	scope of floriculture 1.Learn about Sexual	scope.	C N A	Lastura
		2	Nursery	and vegetative	1. how sterilize soil for nursery?	S.M.	Lecture
			Manageme nt and	methods of	2. When we mulching		
			Routine	propagation.	a plant?		
			Garden	knowing Soil	3. Describe the role of		
			Operations	sterilization, Seed	PGRs.		
			·	sowing, Planting and			
				Mulching.			
				3. Gain knowledge			
				about Role of plant			
				growth regulators.			
		3.	Ornamenta	1. Learn about	1. Write two names	S.M	Lecture
			l Plants	ornamental trees,	of succulent plant.		
				Ornamental bulbous and foliage plants.	2. What is ornamental tree?		
				2.	ornamental tree:		
				KnowingCultivation			
				of plants in pots;			
				Indoor gardening;			
				Bonsai.			
		4.	Principles	1.Gain knowledge	1.Describe about	S.M.	Lecture
			of Garden	about English,	Flower beds.		
			Designs	Italian, French,	2. Named some		
				Persian, Mughal and	famous garden in		
				Japanese gardens;	India.		
				Features of a garden. 2. Know about Some			
				Famous gardens of			
				India.			
	ŀ	5.	Landscapin	Learn about		G.M.	Lecture
			g Places of	Landscaping			
			Public	highways and			
			Importance	educational			
				institutions.			
		6.	Commercia	1. Learn the Factors	1 How Gerbera and	G.M.	Lecture
				affecting flower	Aster are cultivated?		
			Floriculture	production.	2. How factors are		
				2.Know about	affecting on flowering		
				Production and	plant?		
				packaging of cut			

			flowers; Flower arrangements; Methods to prolong vase life. 3. Get knowledge about Cultivation of Important cut flowers.			
	7.	Diseases and Pests of Ornamenta I Plants.	Know about ornamental plant Diseases and its pests.	Name some pests of ornamental plant.	G.M.	Lecture

Туре	Paper	Unit	Topic	Learning Objectives	Related Question	Teacher	Teaching Methods
				SEMESTER -VI			
	DSE2T: Genetics and Plant Breeding	1.	Heredity	1.Learn brief life history of Mendel and Terminologies 2. Know about Laws of Inheritance, Modified Mendelian Ratios, lethal Genes, Co - dominance, incomplete dominance. 3. Learn about Chi Square, Pedigree Analysis 4. Gain knowledge about Cytoplasmic Inheritance 5.Learn about Multiple allelism, Pleiotropism, Chromosome theory of Inheritance.	1.What is lethal gen? 2. Write down the law of inheritance. 3. Define Co-Dominance and incomplete dominance give example.	G.M.	Lecture
		2.	Sex- determi nation and Sex- linked Inherita	Knowing about Sexdetermination.	Write a note about sex linked inheritance.	S.M.	Lecture

		nco				
		nce	1 Cataarran f	4.34/6-11-	C N 4	I a atomic
	3.	Linkage and crossing over	1.Get concept of linkage, coupling & repulsion.2. Learn about	1.What is linkage?2. Define coupling and	S.M.	Lecture
			recombination frequency, linkage maps based on two	repulsion. 3. write the significance of		
			and three factorcrosses.3. Get knowledgeabout Crossing over.	crossing over.		
	4.	Mutatio ns and Chromo somal Aberrati ons	1. Knowing about mutations 2.Learn about Numerical and Structural chromosomal changes.	1. What is mutagen? 2. Deference between Polyploidy and Aneuploidy 3. What is dilation?	S.M.	Lecture
	5.	Plant Breedin g	 Know about Breeding systems. Important achievements and undesirable consequences of plant breeding. 	Define plant breeding.	G.M.	Lecture
	6.	Method s of crop improve ment	1. Know about Centres of origin and domestication of crop plants. 2. Learn about Selection methods: For self-pollinated, cross pollinated and vegetatively propagated plants. 3. Know about Hybridization	What is Hybridization?	G.M.	Lecture
	7.	Quantita tive inherita nce	Get Concept of inheritance, mechanism, examples.	Deference between Monogenic vs polygenic Inheritance.	S.M.	Lecture
	8.	Inbreedi ng	Know about genetic basis of inbreeding	1.What is Inbreeding	S.M.	Lecture

	l					
		depressi	depression and	depression.		
		on and	heterosis;	2. Write the		
		heterosi	Applications.	application of		
		S		heterosis		
	9.	Crop	Knowing about Role	Write the role	G.M.	Lecture
		improve	of mutations;	of		
		ment	Polyploidy; Distant	biotechnology		
		and	hybridization and role	in crop		
		breedin	of biotechnology in	improvement.		
				improvement.		
5.555		g	crop improvement.			
DSE2P:	1.	Mendel'	Knowing about	Determine	G.M.	Demonstration
Genetics		s laws	Probability and chi-	the chi-square		
and Plant		through	square.	test in		
Breeding		seed		Mendelian		
(Practical)		ratios.		deviation.		
		Laborat		Data supplied		
		ory		by		
		exercise		department.		
		s in				
		probabil				
		ity and				
		chi-				
		square.				
	2.	Incompl	Knowing about	Determine	G.M.	Demonstration
		ete	Incomplete	Incomplete		
		domina	dominance.	dominance		
		nce and		through seed		
		gene		ratios 13:3.		
		interacti				
		on				
		through				
		seed				
		ratios				
		(9:7,				
		9:6:1,				
		13:3,				
		15:1,				
		12:3:1,				
		9:3:4).				
	3.	Study of	Knowing	Write the	G.M.	Demonstration
		aneuploi	aboutDown's,	cause and		
		dy:	Klinefelter's and	symptom		
		Down's,	Turner's syndromes	ofKlinefelter's		
		Klinefelt	for aneuploidy.	syndromes		
		er's and	io. dileapiolay.	3,1101011103		
		Turner's				
		C) (10 d) : :				
		syndrom es				

	4.	through photogr aphs. Hybridiz ation techniq	Learn about hybridization techniques.	Write the process of emasculation.	S.M.	Demonstration
	5.	ues. Inductio n of polyploi dy conditio ns in plants.			S.M.	Demonstration
SEC4T: Medicina Botany	1.	Medicin al Plants	Learn about History, Scope and Importance of Medicinal Plants	1. Name two medicinal plant. 2. Define Ayurveda:	G.M.	Lecture
	2.	Conserv ation of endange red and endemic medicin al plants.	Knowing about Conservation of endangered and endemic medicinal plants.	1.What is conservation? 2. What is endemic and endanger species? 3. Define Insitu conservation.	S.M.	Lecture
	3.	Ethnobo tany and Folk medicin es.	Gain knowledge about Ethnobotany and Folk medicines.	1.What is Folk medicine? 2.Write the Applications of Ethnobotany.	G.M.	Lecture

Lesson Plan for (CBCS General) for the Academic Session 2021-2022

Тур	Paper	Uni	Topic	Learning Objectives	Related	Teache	Teachin
е		t			Questions	r	g Metho
							ds
			SEMES	STER-I	I	I	

CC-I	DSC-1AT Biodiversity	1.	a) Viruses.	To know about Structure, Type and Economic importance of Viruses.	1. What is virion? 2. Give example DNA & RNA viruses	G.M.	Lectu re
			b) Bacteria.	To Know About cell structure, Reproduction and economic importance	1.What is plasmid? 2. What is Mesosome? What is Genophore?	S.M.	Lectu re
		2.	Algae	1. General knowledge about algae. 2. Classification of algae 3. Economic importance of algae	1.What is Thallus? 2. Example an algae which is rich in protein. 3. What is the importance of algae in medicine.	G.M.	Lectu re
		3.	Fungi	1.To know about General characteristics of Fungi 2. Knowing reproduction and classification. 3. Knowledge about Nutrition. 4. To know about Symbiotic Associations of Lichens Mycorrhiza.	1. What are true Fungi? 2. Name two edible and poisonous mushroom. 3. What is dolipore septum?	S.M.	Lectu re
		4.	Introductio n to Archegonia te	1.To know about Archegoniate. 2. Knowledge about Alternation of generation.	 What is Archegoniate ? Define Alternation of generation 	S.M.	Lectu re

	5.	Bryophytes	1.Knowing general characteristics, classification of Bryophytes 2. Knowledge about Morphology, anatomy, and Reproduction of Marchantia and Funaria. 3. Know about	1. Why Bryophytes are calling amphibian? 2. Write the importance of bryophytes.	S.M.	Lectu
	6.	Pteridophy tes	Ecological importance of bryophytes (Sphagnum) 1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge	1.what is Heterospory ? 2. What is the importance of Selaginella?	G.M.	Lectu re
	7.	Gymnosper m	about stelar evolution. 1. To know General characteristics of gymnosperm. 2. Knowing about morphology, anatomy and reproduction of Cycas and Pinus. 3. Ecological and economical importance.	1.What is Coralloid root? What is the importance of Gymnosperm	G.M.	Lectu re
DSC-C1P Biodiversity (Microbes, Algae, Fungi and Archegoniate	1.	Models of TMV- viruses	Knowing about Viruses	Draw structures and label its part.	G.M.	Dem onstr ation

(Practical)						
	2.	Study of vegetative and reproductive structures of algae	Gain knowledge about reproductive structures of Nostoc, Oedogonium, Vaucheria	Write the identifying characters of vaucheria.	G.M.	Dem onstr ation
	3.	Agaricus	Study about Sectioning of gills of Agaricus	Write the identifying characters of Agaricus and draw its fruit body with label.	S.M.	Dem onstr ation
	4.	Selaginella	Know about morphology and strobilus of Selaginella.	Draw and label Strobilus of Selaginella.	S.M.	Dem onstr ation
	5.	Pteris	Knowing about Morphology, rachis and spore of Pteris	Write the characteristic s of Pteris.	G.M.	Dem onstr ation

Type	Paper	Unit	Topic	Learning Objectives	Related Questions	Teacher	Teachin g Method				
							S				
	SEMESTER-II										
CC-II	DSC1B(C2T): Plant Ecology and Taxonomy	1.	Introduction	To know about Ecology.	1.What is ecology? 2. who coined the name ecology	S.M.	Lecture				

		Facilities	4 1/2 - 1 : :	4 14/1 1 1	C N 4	Last
	2.	Ecological	1.Knowing	1.What is soil	S.M.	Lecture
		factors	about	profile?		
			Soil and its	2.What is		
			formation.	capillary		
			2. To know	water?		
			about soil	3. What is		
			profile.	Shelford law?		
			3. Knowledge	4. Name two		
			about States of	xerophytic		
			water in the	plant.		
			environment,			
			precipitation			
			types.			
			4. Knowing Light			
			and			
			temperature			
			5. Know about			
			Shelford law of			
			tolerance.			
			6. Know about			
			Adaptation of			
			· ·			
			hydrophytes			
	2	Plant	and xerophytes.	1 \\/ha+:a	CNA	Lostina
	3.		1.To know	1. What is	S.M.	Lecture
		communities	about Ecotone	ecotone and		
			and edge effect	edge effect?		
			2.Knowledge	2. What is the		
			about	pioneer of		
			Succession,	xerosere?		
			Processes and	3. what is		
			types.	sere?		
	4.	Ecosystem	1. To know	1. What is	S.M.	Lecture
			about	ecosystem?		
			ecosystem,	2. Deference		
			energy flow	between food		
			trophic	chain and food		
			organization.	webs.		
			2. Knowing	3. Define Bio-		
			Food chains and	geo-chemical		
			food webs,	cycle.		
			Ecological	4. What is De		
			pyramids.	nitrification.		
			3.To know			
			production and			
			productivity in			
			ecosystem.			
			4. Knowledge			
			about			
	i	I .	i about	ĺ	Ī	i

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		Biogeochemical cycling (carbon, nitrogen and Phosphorous cycle).			
5.	Phytogeograp hy	1.To know the principle of biogeographical zone. 2. Knowing about Endemism.	Write the definition of Endemism.	S.M.	Lecture
6.	Introduction to plant Taxonomy	To know about Identification, classification and Nomenclature	1. What is Taxonomy? 2. who coined the name taxonomy	S.M.	Lecture
7.	Identification	1. Knowledge about Herbarium. 2. Knowing the Functions and Important of herbarium and botanical gardens of the world and India 3. Larne about Documentation Flora, Keys.	1. What is the Measurement of Herbarium shit? 2. Which is the largest Botanical Garden in India and world. 3. What is Flora?	G.M.	Lecture
8.	Taxonomic evidences from palynology, cytology, phytochemistr y and molecular data	To know about Palynology, cytology, phytochemistry and molecular data	1.What is Palynology? 2. What is cytology?	G.M.	Lecture
9.	Taxonomic hierarchy	1.Knowledge about Ranks, categories and taxonomic groups	1.What is Taxonomic hierarchy? 2. What is Lineal hierarchy? 3. What is Rank?	G.M.	Lecture

	10.	Botanical nomenclature	1. To know about Principles and rules of ICN. 2. Learn about binominal system. 3. Knowing about typification, author citation, valid publication, rejection of names, principle of priority and	1.What is binomial nomenclature? 2. What is author citation and valid publication?	G.M.	Lecture
	11.	Classification	its limitations. 1.Knowing about Types of classification- artificial, natural and phylogenetic. 2. To learn Bentham and Hooker, Engler and Prantl classification	What is classification?	G.M.	Lecture
	12.	Biometrics, numerical taxonomy and cladistics	1. Know about Characters, variations, OTUs, 2. Knowledge about cluster analysis; 3. To learn phenograms, cladograms	1. What is OTUs? 2. Difference between Phenogram and Cladogram.	G.M.	Lecture

DSC1BP (Plant Ecology and Taxonomy)	1.	Study of morphological adaptations of hydrophytes and xerophytes.	Knowing about morphology of hydrophytes and xerophytes.	Anatomical and Physiological structural diagram of hydrophytes and xerophytes.	G.M.	Demons tration
	2.	Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law	Know about Raunkiaer's frequency distribution law.	Describe minimum size of Quadrate by Raunkiaer's law.	G.M.	Demons tration
	3.	Study of vegetative and floral characters of the following families (Description, V.S. flower, section of ovary, floral diagram, floral formula and systematic position according to Bentham & Hooker's system of classification): Brassicaceae - Brassica, Asteraceae, Vernonia, Tridax; Solanaceae - Solanum nigrum,	To know about floral diagram, floral formula and systematic position.	Description Floral diagram, floral formula.	G.M.	Demons

	Liliaceae - Salvia,				
4.	Mounting of a properly dried and pressed specimen of any wild plant with herbarium label	To know prepare Herbarium.	Submitted herbarium copy in the record book.	G.M.	Lecture

Тур	Paper	Uni	Topic	Learning	Related	Teach	Teaching
е		t		Objectives	Question	er	Methods
			SE	MESTER-III			
CC3	CC3 DSC-1CT Plant Anatomy and Embryology	1.	Meristematic and permanent tissues	1.To knowing about Root and shoot apical meristems. 2. Learn About Simple and complex tissues.	1.Deferencial to between Simple and Complex tissue 2. What is Root apex?		
		2.	Organs	Knowledge about Structure of dicot and monocot root, stem and leaf.		G.M.	Lecture
		3.	Secondary Growth	1. General knowledge about Vascular cambium. 2. Know about Secondary growth in root and stem, Wood.	1.Write the function of vascular cambium. 2. What is Heart wood	G.M.	Lecture
		4.	Adaptive and protective systems	1.Gain Knowledge about Adaptive and Protective system of plant. 2. Knowing about adaptations in xerophytes and hydrophytes.	1.Write a note about stomata. 2. What is the function of epidermis?	S.M.	Lecture

Г	Τ_	Ta	1			T
	5.	Structural organization of flower	1. Know about Structure of anther and pollen. 2. Knowing the types of ovules. 3. Learn about embryo sacs.		S.M.	Lecture
	6.	Pollination and fertilization	 Knowledge about Pollination and adaptations Brief Knowledge about Double fertilization. Learn about Seed dispersal mechanisms. 	1.What is pollination? 2. What is allogamy? 3. Deference between cross & selfpollination.	S.M.	Lecture
	7.	Embryo and endosperm	1. Knowledge about Endosperm 2. Learn about Dicot and monocot embryo.	1.What is embryo? 2. What is the Function of Endosperm?	G.M.	Lecture
	8.	Apomixis and polyembryon y	Gain knowledge about Apomixis and polyembryonyan dits practical applications.	1. What is polyembryon y. 2. Mention the application of polyembryon y	S.M.	Lecture
DSC1CP: Plant Anatomy and Embryology (Practical)	1.	Study of meristems through permanent slides	Gain knowledge about Meristem.	Write about meristem.	G.M.	Demonst ration
	2.	Stem	Learn about monocot stem.	Write characters of monocot stem.	S.M.	Demonst ration
	3.	Adaptive anatomy of Xerophyte	Learn about Xerophytic and Hydrophyt	Write the Xerophytic adaptation	G.M.	Demonst ration

		and Hydrophyte	Adaptation.	of Hydrilla.		
	4.	Types of ovules:	Know about Ovules of various types.	Describe anatropous and camphylotro pous ovules.	G.M.	Demonst ration
SEC-1: Bio- fertilizers	1.	General account about the microbes used as bio fertilizer (Rhizobium)	Learn about Microbes used in bio fertilizer.	1. How isolat Rhizobium? 2. Write uses of Bio fertilizer	G.M.	Lecture
	2.	Azospirillum Azotobacter	1. Know to isolation of Azospirillum. 2. Learn about Azotobactor it's characteristic and crop response.	1. What is crop response of Azotobactor ?	G.M.	Lecture
	3.	Cyanobacteri a (blue green algae), Azolla and Anabaena	1. Knowing about Cyanobacteria, Azola and Anabaena 2. Know about Nitrogen fixation by Azolla. 3. Learn about the function of blue green algae & azolla in cultivation of rice.	1. What are Cyanobacteri a? 2. How nitrogen fixed by blue green algae? 3. Write the role of azolla in rice cultivation.	S.M.	Lecture
	5.	Mycorrhizal association, VAM – isolation and inoculum production of VAM, and its influence on growth and yield of crop plants.	1. Learn about Mycoriza,VAM. 2. Knowing VAM to influence on growth and yield of crop plants.	1.What is VAM? 2. Write the function of VAM in crop plant.	S.M.	Lecture

6.	Organic	1. Knowing	1.What is	G.M.	Lecture
	farming	about organic	organic		
	green	farming.	farming?		
	manuring and	2. Learn about	2. How		
	organic	organic	recycle		
	fertilizers,	Fertilizer.	biodegradabl		
	Recycling of	3. Knowing	e wastes?		
	biodegradabl	about Recycling	3. Write the		
	e municipal,	of biodegradable	application		
	agricultural	wastes.	of		
	and Industrial	4. Learn to	vermicompo		
	wastes –	making of	st?		
	biocompost	vermicompost			
	making	and its used.			
	methods,				
	types and				
	method of				
	vermicompos				
	ting – field				
	Application.				

Type	Paper	Unit	Topic	Learning Objectives	Related Questions	Teacher	Teachin g Method s		
	SEMESTER-IV								
CC-4	DSC1D T(C4T) : Plant Physiol ogy and Metab olism	1.	Plant-water relations	1.Knowing about Importance of water, water potential and its components 2. Get knowledge about Transpiration and its significance. 3. Know about Factors affecting transpiration. 4. Knowledge about Root pressure and guttation.	1. Write importance of water in leaving organs. 2. What is the significance of transpiration in plant? 3. Deference between Transpiration & guttation	G.M.	Lecture		
		2.	Mineral nutrition	 Learn about Essential elements, macro and micronutrients. Knowing Role of 	1.Define micro and macro nutrients with example. 2. Describe the	S.M.	Lecture		

			occontial alarmants	role of		
			essential elements.			
			3. Get knowledge	essential		
			about Transport of	elements in		
			ions across cell	plant.		
			membrane	3. Deference		
			4. Learn about active	between		
			and passive	active and		
			transport.	passive		
				transport.		
	3.	Translocation in	1. Knowing about	1.What is	G.M.	Lecture
		phloem	Composition of	Phloem sap?		
		F	phloem sap.	2. Define		
			2. To know Pressure	apoplast		
			flow model.	pathway?		
			3. Get knowledge	patriway:		
			about Phloem			
			loading and			
			unloading	-		
	4.	Photosynthesis	1. Knowing	1. Define	G.M.	Lecture
			Photosynthetic	Photosynthesi		
			Pigments (Chl a, b,	S.		
			xanthophylls,	2. What are		
			carotene).	antenna		
			2. Get knowledge	molecules?		
			about Photosystem I	3. Describe		
			and II, reaction	ATP synthesis.		
			center, antenna	4. Write about		
			molecules.	CAM pathway.		
			4. Knowing Electron	CAIVI patriway.		
			transport and			
			•			
			mechanism of ATP			
			mechanism of ATP synthesis.			
			mechanism of ATP synthesis. 4. Knowledge about			
			mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM			
			mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon			
			mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM			
			mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon			
			mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation.			
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about	1. What is	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about		G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic	Glycolysis?	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA	Glycolysis? 2. Write a	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA cycle.	Glycolysis? 2. Write a short note of	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA cycle. 2. Knowledge about	Glycolysis? 2. Write a short note of TCA cycle.	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA cycle. 2. Knowledge about Oxidative	Glycolysis? 2. Write a short note of TCA cycle. 3. What is	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA cycle. 2. Knowledge about Oxidative phosphorylation,	Glycolysis? 2. Write a short note of TCA cycle.	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA cycle. 2. Knowledge about Oxidative phosphorylation, Glyoxylate.	Glycolysis? 2. Write a short note of TCA cycle. 3. What is	G.M.	Lecture
	5.	Respiration	mechanism of ATP synthesis. 4. Knowledge about C3, C4 and CAM pathways of carbon fixation. 5. Learn about Photorespiration. 1. Know about Glycolysis, anaerobic respiration, TCA cycle. 2. Knowledge about Oxidative phosphorylation,	Glycolysis? 2. Write a short note of TCA cycle. 3. What is	G.M.	Lecture

			Phosphate Pathway.			
	6.	Enzymes	1.Learn about Structure and properties of enzyme. 2. Mechanism of enzyme catalysis and enzyme inhibition.	1.	S.M.	Lecture
	7.	Nitrogen metabolism	Know about Biological nitrogen fixation.	1.What is Nef gen and nod gene? 2. Name two nitrogen fixing bacteria. 3. What is ammonificatio n?	G.M.	Lecture
	8.	Plant growth regulators	Learn about Discovery and physiological roles of auxins, gibberellins, cytokinin, ABA, ethylene.	1.What is PGRs? 2. Write the role of ABA in stress condition in plant. 3. what is triple response	S.M.	Lecture
	9.	Plant response to light and temperature	1.Learn about Photoperiodism. 2.Knoledge about Phytochromeand Vernalization.	 What is vernalization? Describe phytochrome. What is SDP? 	S.M.	Lecture
DSC- 1DP- Plant Physiol ogy and	1.	Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte.	Knowledge about Stomatal Index and it's frequency.	Calculate stomatal Index of a mesophyte plant.	G.M.	Demons tration
Metab olism (Practi	2.	Demonstration of Hill reaction	Learn about Hill Reaction.	Demonstratio n of Hill reaction.	P.M.	Demons tration

cal)	3.	Effect of auxins on rooting.	Know about auxin as PGRs	Demonstratio n of rooting	G.M.	Demons tration
	4.	Determination of osmotic potential of plant cell sap by plasmolytic method.	Knowing about Plasmolytic Methods.	Determination of osmotic potential of plant cell sap by plasmolytic method.	P.M.	Demons tration
	5.	R.Q.	Knowing about R.Q.	Demonstratio n of R.Q.	P.M.	Demons tratio
SEC2T: Mushr oom Cultur e Techn ology	1.	Introduction	1.To know Nutritional and medicinal value of edible mushrooms. 2. Learn about Poisonous mushrooms. 3. Get knowledge about types of edible mushrooms available in India.	1. How to defer poisonous mushroom from edible one? 2. Describe the nutritional value of mushroom	G.M	Lecture
	2.	Cultivation Technology	 Learn about Cultivation technology. Learn about Mushroom bed preparation. 	Write a note about preparation of mushroom bed.	G.M.	Lecture
	3.	Storage and nutrition	1. Gain knowledge about Short-term storage and long-term Storage. 2. Know about the nutritional value of mushroom.	1.How we store for long time? 2. Write nutritional value of mushroom.	G.M.	Lecture
	4.	Food Preparation	1. Gain knowledge about Types of foods prepared from mushroom. 2. learn Research Centers - National level and regional level. 3. Knowing the Marketing in India and abroad, Export Value.	Which tipes of food prepared from mushroom?	G.M.	Lecture

Type	Paper	Uni t	Topic	Learning Objectives	Related Questions	Teacher	Teaching Methods
	I			SEMISTER-V		1	
	DSE1T: Econo mic Botany and Biotec	1.	Origin of Cultivated Plants	1.Gain Concept of centers of origin. 2. Know their importance with reference to Vavilov's work	Mention the concept of 'Vavilov center of crop origin'	G.M.	Lecture
	hnolog y	2.	Cereals	Know about Wheat & its Origin, morphology, uses.	 What are cereals? Write the uses of wheat. 	G.M	Lecture
		3.	Legumes	Gain knowledge with special reference to Gram and soybean	 Give note about Gram. Write the scientific name of soybean 	G.M.	Lecture
		4.	Spices	Learn about clove and black pepper.	1. Write the scientific name and family of clove. 2. Write the uses of black pepper	G.M.	Lecture
		5.	Beverages	Know about morphology, processing and uses of tea	1.What is Oolong tea?2. Discuss the processing of tea	G.M.	Lecture
		6.	Oils and Fats	Learn about groundnut	1.Write down the botanical name of groundnut. 2. Discuss uses of groundnut.	G.M.	Lecture
		7.	Fibre Yielding Plants	Gain knowledge about Botanical name, family, part used, morphology and uses of cotton.	Write down the Family of Cotton. 2. Mention the uses of cotton in daily life of human beings.	G.M.	Lecture
		8.	Introductio n to biotechnol ogy	Knowing about biotechnology and its significance.	1.What is biotechnology? 2. Write the uses of biotechnology.	S.M.	Lecture
		9.	Plant tissue culture	Gain knowledge about Micropropagation.	1.What is micropropagation? 2. Write the	S.M.	Lecture

			2. Knowing about haploid production through androgenesis and gynogenesis 3. Learn to brief account of embryo & endosperm culture with their applications	advantage of micropropagation. 3. What is Totipotency?		
	10.	Recombina nt DNA Techniques	1. Knowing about Blotting techniques. 2. Learn about DNA Fingerprinting. 3. Gain knowledge about molecular DNA markers i.e. RAPD, RFLP, SNPs. 4. Learn about PCR and Reverse Transcriptase-PCR. Hybridoma and monoclonal antibodies, ELISA. 5. Human gene Therapy.	1.Write down a note of Northern blotting. 2. Describe the significance of DNA Fingerprinting. 3. What is DNA marker? 4. Write the full form of RAPD. 5. What is PCR,write it's use. 6.Briefly describe about Humen genTherapy.	S.M.	Lecture
DSE1P: Econo mic Botany and	1.	Study of economical ly important plants	Know about sections and microchemical tests of economically important plant	Section the given specimen and write down its characters	G.M.	Demons tration
Biotec hnolog y (Practi cal)	2.	Familiarizat ion with basic equipment s in tissue culture	Learn about tissue culture	Describe tissue culture with basic equipment.	G.M.	Demons tration
	3.	Study through photograph s	Knowing about Anther culture, somatic embryogenesis, endosperm and embryo culture; micropropagation	Describe Anther culture with suitable diagram.	S.M.	Demons tration
	4.	Study of molecular techniques	Learn about PCR, Blotting techniques, AGE and PAGE.	Demonstrate blotting techniques.	S.M.	Demons tration

SEC3T	1.	Introductio	Know about	1.What is	G.M	Lecture
Floricul		n	gardening,	floriculture?		
ture			Importance and	2. Write down its		
	_	NI	scope of floriculture	scope.	6.14	1
	2	Nursery	1.Learn about Sexual	1. how sterilize soil	S.M.	Lecture
		Manageme	and vegetative	for nursery?		
		nt and	methods of	2. When we mulching		
		Routine Garden	propagation.	a plant? 3. Describe the role of		
		Operations	2. knowing Soil sterilization, Seed	PGRs.		
		Operations	sowing, Planting and	runs.		
			Mulching.			
			3. Gain knowledge			
			about Role of plant			
			growth regulators.			
	3.	Ornamenta	1. Learn about	1. Write two names	S.M	Lecture
		l Plants	ornamental trees,	of succulent plant.		
			Ornamental bulbous	2. What is		
			and foliage plants.	ornamental tree?		
			2.			
			KnowingCultivation			
			of plants in pots;			
			Indoor gardening;			
			Bonsai.			
	4.	Principles	1.Gain knowledge	1.Describe about	S.M.	Lecture
		of Garden	about English,	Flower beds.		
		Designs	Italian, French,	2. Named some		
			Persian, Mughal and Japanese gardens;	famous garden in India.		
			Features of a garden.	iliula.		
			2. Know about Some			
			Famous gardens of			
			India.			
	5.	Landscapin	Learn about	What is landscaping	G.M.	Lecture
		g Places of	Landscaping	Places?		
		Public	highways and			
		Importance	educational			
			institutions.			
	6.	Commercia	1. Learn the Factors	1 How Gerbera and	G.M.	Lecture
		1	affecting flower	Aster are cultivated?		
		Floriculture	production.	2. How factors are		
			2.Know about	affecting on flowering		
			Production and	plant?		
			packaging of cut flowers; Flower			
			arrangements;			
			Methods to prolong			
	<u> </u>		iviculous to prolong			

			vase life. 3. Get knowledge about Cultivation of Important cut flowers.			
	7.	Diseases and Pests of Ornamenta I Plants.	Know about ornamental plant Diseases and its pests.	Name some pests of ornamental plant.	G.M.	Lecture

Type	Paper	Unit	Topic	Learning Objectives	Related Question	Teacher	Teaching Methods
				SEMESTER -VI	Question		Methous
				SLIVILSTER -VI			
	DSE2T: Genetics and Plant Breeding	1.	Heredity	1.Learn brief life history of Mendel and Terminologies 2. Know about Laws of Inheritance, Modified Mendelian Ratios, lethal Genes, Co - dominance, incomplete dominance. 3. Learn about Chi Square, Pedigree Analysis 4. Gain knowledge about Cytoplasmic Inheritance 5.Learn about Multiple allelism, Pleiotropism, Chromosome theory of Inheritance.	1.What is lethal gen? 2. Write down the law of inheritance. 3. Define Co-Dominance and incomplete dominance give example.	G.M.	Lecture
		2.	Sex- determi nation and Sex- linked Inherita nce	Knowing about Sexdetermination.	Write a note about sex linked inheritance.	S.M.	Lecture
		3.	Linkage and	1.Get concept of linkage, coupling &	1.What is linkage?	S.M.	Lecture

T I	Г	ı			0.0.0		1
			crossing	repulsion.	2. Define		
			over	2. Learn about	coupling and		
				recombination	repulsion.		
				frequency, linkage	3. write the		
				maps based on two	significance of		
				and three factor	crossing over.		
				crosses.			
				3. Get knowledge			
				about Crossing over.			
	7	4.	Mutatio	1. Knowing about	1. What is	S.M.	Lecture
			ns and	mutations	mutagen?		
			Chromo	2.Learn about	2. Deference		
			somal	Numerical and	between		
			Aberrati	Structural	Polyploidy		
			ons	chromosomal	and		
				changes.	Aneuploidy		
					3. What is		
					dilation?		
	<u> </u>	5.	Plant	1. Know about	Define plant	G.M.	Lecture
		J.	Breedin	Breeding systems.	breeding.	G.1V1.	Lecture
				2. Important	brecuing.		
			g	achievements and			
				undesirable			
				consequences of			
		_	N 4 - 1 l l	plant breeding.	AA/I I	6.14	l
	(6.	Method	1. Know about	What is	G.M.	Lecture
			s of crop	Centres of origin and	Hybridization?		
			improve	domestication of crop			
			ment	plants.			
				2. Learn about			
				Selection methods:			
				For self-pollinated,			
				cross pollinated and			
				vegetatively			
				propagated plants.			
				3. Know about			
				Hybridization			
	'	7.	Quantita	Get Concept	Deference	S.M.	Lecture
			tive	ofinheritance,	between		
			inherita	mechanism,	Monogenic vs		
			nce	examples.	polygenic		
					Inheritance.		
	[;	8.	Inbreedi	Know about genetic	1.What is	S.M.	Lecture
			ng	basis of inbreeding	Inbreeding		
			depressi	depression and	depression.		
			on and	heterosis;	2. Write the		
			heterosi	Applications.	application of		
<u> </u>	l I			1-1			1

			S		heterosis		
	}	9.	Crop	Knowing about Role	Write the role	G.M.	Lecture
		٥.	improve	of mutations;	of	G.IVI.	Lecture
			ment	Polyploidy; Distant	biotechnology		
			and	hybridization and role	in crop		
			breedin	of biotechnology in	improvement.		
				• •	improvement.		
DC1	E2P:	1.	g Mendel'	crop improvement.	Determine	G.M.	Demonstration
	enetics	1.		Knowing about		G.IVI.	Demonstration
			s laws	Probability and chi-	the chi-square		
	d Plant		through	square.	test in		
	eeding		seed		Mendelian		
(Pr	ractical)		ratios.		deviation.		
			Laborat		Data supplied		
			ory		by		
			exercise		department.		
			s in				
			probabil				
			ity and				
			chi-				
			square.				
		2.	Incompl	Knowing about	Determine	G.M.	Demonstration
			ete	Incomplete	Incomplete		
			domina	dominance.	dominance		
			nce and		through seed		
			gene		ratios 13:3.		
			interacti				
			on				
			through				
			seed				
			ratios				
			(9:7,				
			9:6:1,				
			13:3,				
			15:1,				
			12:3:1,				
			9:3:4).				
	ļ	3.	Study of	Knowing	Write the	G.M.	Demonstration
			aneuploi	aboutDown's,	cause and		
			dy:	Klinefelter's and	symptom		
			Down's,	Turner's syndromes	ofKlinefelter's		
			Klinefelt	for aneuploidy.	syndromes		
			er's and		7.1.0.1.1.0.		
			Turner's				
			syndrom				
			es				
			es through				
			_				
			photogr				
			aphs.				

	4.	Hybridiz ation techniq ues.	Learn about hybridization techniques.	Write the process of emasculation.	S.M.	Demonstration
	5.	Inductio n of polyploi dy conditio ns in plants.	Know about role of polyploidy	Describe how polyploidy use in yield species.	S.M.	Demonstration
SEC4T: Medicinal Botany	1.	Medicin al Plants	Learn about History, Scope and Importance of Medicinal Plants	1. Name two medicinal plant. 2. Define Ayurveda:	G.M.	Lecture
	2.	Conserv ation of endange red and endemic medicin al plants.	Knowing about Conservation of endangered and endemic medicinal plants.	1.What is conservation? 2. What is endemic and endanger species? 3. Define Insitu conservation.	S.M.	Lecture
	3.	Ethnobo tany and Folk medicin es.	Gain knowledge about Ethnobotany and Folk medicines.	1.What is Folk medicine? 2.Write the Applications of Ethnobotany.	G.M.	Lecture

Lesson Plan for (CBCS General) for the Academic Session 2022-2023

Тур	Paper	Uni	Topic	Learning Objectives	Related	Teache	Teachin				
е		t			Questions	r	g				
							Metho				
							ds				
	SEMESTER-I										

CC-I	DSC-1AT Biodiversity	1.	a) Viruses.	To know about Structure, Type and Economic importance of Viruses.	1. What is virion? 2. Give example DNA & RNA viruses	G.M.	Lectu re
			b) Bacteria.	To Know About cell structure, Reproduction and economic importance	1.What is plasmid? 2. What is Mesosome? What is Genophore?	S.M.	Lectu re
		2.	Algae	1. General knowledge about algae. 2. Classification of algae 3. Economic importance of algae	1.What is Thallus? 2. Example an algae which is rich in protein. 3. What is the importance of algae in medicine.	G.M.	Lectu re
		3.	Fungi	1.To know about General characteristics of Fungi 2. Knowing reproduction and classification. 3. Knowledge about Nutrition. 4. To know about Symbiotic Associations of Lichens Mycorrhiza.	1. What are true Fungi? 2. Name two edible and poisonous mushroom. 3. What is dolipore septum?	S.M.	Lectu
		4.	Introductio n to Archegonia te	1.To know about Archegoniate. 2. Knowledge about Alternation of generation.	 What is Archegoniate ? Define Alternation of generation 	S.M.	Lectu re

	5.	Bryophytes	1.Knowing general characteristics, classification of Bryophytes 2. Knowledge about Morphology, anatomy, and Reproduction of Marchantia and Funaria. 3. Know about Ecological importance of bryophytes (Sphagnum)	1. Why Bryophytes are calling amphibian? 2. Write the importance of bryophytes.	S.M.	Lectu
	6.	Pteridophy tes	1.Knowing about Early land plant 2. Knowing about Morphology, anatomy and Reproduction of selaginella, Equisetum and Pteris. 3. Knowledge about stelar evolution.	1.what is Heterospory ? 2. What is the importance of Selaginella?	G.M.	Lectu re
	7.	Gymnosper	1. To know General characteristics of gymnosperm. 2. Knowing about morphology, anatomy and reproduction of Cycas and Pinus. 3. Ecological and economical importance.	1.What is Coralloid root? What is the importance of Gymnosperm	G.M.	re
DSC-C1P Biodiversity (Microbes, Algae, Fungi	1.	Models of TMV- viruses	Knowing about Viruses	Draw structures and label its part.	G.M.	Dem onstr ation

and Archegoniate (Practical)	2.	Study of vegetative and reproductive structures of algae	Gain knowledge about reproductive structures of Nostoc, Oedogonium, Vaucheria	Write the identifying characters of vaucheria.	G.M.	Dem onstr ation
	3.	Agaricus	Study about Sectioning of gills of Agaricus	Write the identifying characters of Agaricus and draw its fruit body with label.	S.M.	Dem onstr ation
	4.	Selaginella	Know about morphology and strobilus of Selaginella.	Draw and label Strobilus of Selaginella.	S.M.	Dem onstr ation
	5.	Pteris	Knowing about Morphology, rachis and spore of Pteris	Write the characteristic s of Pteris.	G.M.	Dem onstr ation

Туре	Paper	Unit	Topic	FCTFF	Learning Objectives	Related Questions	Teacher	Teachin g Method s
			SEIVI	ESTEF	(-11			
CC-II	DSC1B(C2T): Plant Ecology and Taxonomy	1.	Introduction		now about ogy.	1.What is ecology? 2. who coined the name ecology	S.M.	Lecture
		2.	Ecological factors	abo Soil forn 2. To abo prof	and its nation. o know ut soil	1.What is soil profile? 2.What is capillary water? 3. What is Shelford law? 4. Name two	S.M.	Lecture

				T	T	,
			about States of	xerophytic		
			water in the	plant.		
			environment,			
			precipitation			
			types.			
			4. Knowing Light			
			and			
			temperature			
			5. Know about			
			Shelford law of			
			tolerance.			
			6. Know about			
			Adaptation of			
			hydrophytes			
			and xerophytes.			
	3.	Plant	1.To know	1. What is	S.M.	Lecture
		communities	about Ecotone	ecotone and		
			and edge effect	edge effect?		
			2.Knowledge	2. What is the		
			about	pioneer of		
			Succession,	xerosere?		
			Processes and	3. what is		
			types.	sere?		
	4.	Ecosystem	1. To know	1. What is	S.M.	Lecture
			about	ecosystem?		
			ecosystem,	2. Deference		
			energy flow	between food		
			trophic	chain and food		
			organization.	webs.		
			2. Knowing	3. Define Bio-		
			Food chains and	geo-chemical		
			food webs,	cycle.		
			•	4. What is De		
			Ecological pyramids.	nitrification.		
			3.To know	mumication.		
			production and			
			productivity in			
			ecosystem.			
			4. Knowledge			
			about			
			Biogeochemical			
			cycling (carbon,			
			nitrogen and			
			Phosphorous cycle).			

5.	Phytogeograp hy	1.To know the principle of biogeographical zone. 2. Knowing about Endemism.	Write the definition of Endemism.	S.M.	Lecture
6.	Introduction to plant Taxonomy	To know about Identification, classification and Nomenclature	1. What is Taxonomy? 2. who coined the name taxonomy	S.M.	Lecture
7.	Identification	1. Knowledge about Herbarium. 2. Knowing the Functions and Important of herbarium and botanical gardens of the world and India 3. Larne about Documentation Flora, Keys.	1. What is the Measurement of Herbarium shit? 2. Which is the largest Botanical Garden in India and world. 3. What is Flora?	G.M.	Lecture
8.	Taxonomic evidences from palynology, cytology, phytochemistr y and molecular data	To know about Palynology, cytology, phytochemistry and molecular data	1.What is Palynology? 2. What is cytology?	G.M.	Lecture
9.	Taxonomic hierarchy	1.Knowledge about Ranks, categories and taxonomic groups	1.What is Taxonomic hierarchy? 2. What is Lineal hierarchy? 3. What is Rank?	G.M.	Lecture

	10.	Botanical nomenclature	1. To know about Principles and rules of ICN. 2. Learn about binominal system. 3. Knowing about typification, author citation, valid publication,	1.What is binomial nomenclature? 2. What is author citation and valid publication?	G.M.	Lecture
	11	Classification	rejection of names, principle of priority and its limitations.	NA/L-+	CM	
	11.	Classification	1.Knowing about Types of classification- artificial, natural and phylogenetic. 2. To learn Bentham and Hooker, Engler and Prantl classification	What is classification?	G.M.	Lecture
	12.	Biometrics, numerical taxonomy and cladistics	1. Know about Characters, variations, OTUs, 2. Knowledge about cluster analysis; 3. To learn phenograms, cladograms	1. What is OTUs? 2. Difference between Phenogram and Cladogram.	G.M.	Lecture
DSC1BP (Plant Ecology and Taxonomy)	1.	Study of morphological adaptations of hydrophytes and xerophytes.	Knowing about morphology of hydrophytes and xerophytes.	Anatomical and Physiological structural diagram of hydrophytes and xerophytes.	G.M.	Demons tration

2.	Quantitative analysis of herbaceous vegetation in the college campus for frequency and comparison with Raunkiaer's frequency distribution law	Know about Raunkiaer's frequency distribution law.	Describe minimum size of Quadrate by Raunkiaer's law.	G.M.	Demons tration
3.	Study of vegetative and floral characters of the following families (Description, V.S. flower, section of ovary, floral diagram, floral formula and systematic position according to Bentham & Hooker's system of classification): Brassicaceae - Brassica, Asteraceae, Vernonia, Tridax; Solanaceae - Solanum nigrum, Liliaceae - Salvia,	To know about floral diagram, floral formula and systematic position.	Description Floral diagram, floral formula.	G.M.	Demons tration

	4.	Mounting of a	To know	Submitted	G.M.	Lecture
		properly dried	prepare	herbarium		
		and pressed	Herbarium.	copy in the		
		specimen of		record book.		
		any wild plant				
		with				
		herbarium				
		label				

Тур	Paper	Uni	Topic	Learning	Related	Teach	Teaching
е		t		Objectives	Question	er	Methods
			SE	MESTER-III			
CC3	DSC-1CT Plant Anatomy and Embryology	2.	Meristematic and permanent tissues Organs	1.To knowing about Root and shoot apical meristems. 2. Learn About Simple and complex tissues. Knowledge about Structure of dicot and monocot root,	1.Deferencial to between Simple and Complex tissue 2. What is Root apex?	G.M.	Lecture
		3.	Secondary Growth	1. General knowledge about Vascular cambium. 2. Know about Secondary growth in root and stem, Wood.	1.Write the function of vascular cambium. 2. What is Heart wood	G.M.	Lecture
		4.	Adaptive and protective systems	1.Gain Knowledge about Adaptive and Protective system of plant. 2. Knowing about adaptations in xerophytes and hydrophytes.	1.Write a note about stomata. 2. What is the function of epidermis?	S.M.	Lecture
		5.	Structural organization	1. Know about Structure of		S.M.	Lecture

		1	C (1)		Γ	1	
			of flower	anther and			
				pollen.			
				2. Knowing the			
				types of ovules.			
				3. Learn about			
				embryo sacs.			
		6.	Pollination	1. Knowledge	1.What is	S.M.	Lecture
			and	about Pollination	pollination?		
			fertilization	and adaptations	2. What is		
				2. Brief	allogamy?		
				Knowledge	3. Deference		
				about Double	between		
				fertilization.	cross & self-		
				3. Learn about	pollination.		
				Seed dispersal			
				mechanisms.			
		7.	Embryo and	1. Knowledge	1.What is	G.M.	Lecture
			endosperm	about	embryo?		
				Endosperm	2. What is		
				2. Learn about	the Function		
				Dicot and	of		
				monocot	Endosperm?		
				embryo.	·		
				,			
		8.	Apomixis and	Gain knowledge	1. What is	S.M.	Lecture
			polyembryon	about Apomixis	polyembryon		
			y	and	y. ,		
			'	polyembryonyan	2. Mention		
				dits practical	the		
				applications.	application		
				' '	of		
					polyembryon		
					V		
	DSC1CP:	1.	Study of	Gain knowledge	Write about	G.M.	Demonst
	Plant Anatomy		meristems	about Meristem.	meristem.		ration
	and Embryology		through				
	(Practical)		permanent				
	i. ractical)		slides				
		2.	Stem	Learn about	Write	S.M.	Demonst
		۷.	Jenn	monocot stem.	characters of	J.141.	ration
				monocot stem.	monocot		10001
					stem.		
		3.	Adaptive	Learn about	Write the	G.M.	Demonst
		٥.	anatomy of	Xerophytic and	Xerophytic	G.IVI.	ration
i J		1	•				Tation
			Varanhyta	I Hydronbyt	adantation		
			Xerophyte	Hydrophyt	adaptation		
			Xerophyte and Hydrophyte	Hydrophyt Adaptation.	of Hydrilla.		

SEC-1: Bio-	4.	Types of ovules:	Know about Ovules of various types. Learn about	Describe anatropous and camphylotro pous ovules. 1. How isolat	G.M.	Demonst ration
fertilizers	1.	account about the microbes used as bio fertilizer (Rhizobium)	Microbes used in bio fertilizer.	Rhizobium? 2. Write uses of Bio fertilizer	G.IVI.	Eccurc
	2.	Azospirillum Azotobacter	1. Know to isolation of Azospirillum. 2. Learn about Azotobactor it's characteristic and crop response.	1. What is crop response of Azotobactor ?	G.M.	Lecture
	3.	Cyanobacteri a (blue green algae), Azolla and Anabaena	1. Knowing about Cyanobacteria, Azola and Anabaena 2. Know about Nitrogen fixation by Azolla. 3. Learn about the function of blue green algae & azolla in cultivation of rice.	1. What are Cyanobacteri a? 2. How nitrogen fixed by blue green algae? 3. Write the role of azolla in rice cultivation.	S.M.	Lecture
	5.	Mycorrhizal association, VAM — isolation and inoculum production of VAM, and its influence on growth and yield of crop plants.	1. Learn about Mycoriza,VAM. 2. Knowing VAM to influence on growth and yield of crop plants.	1.What is VAM? 2. Write the function of VAM in crop plant.	S.M.	Lecture
	6.	Organic farming	1. Knowing about organic	1.What is organic	G.M.	Lecture

green manuring and organic fertilizers, Recycling of biodegradabl e municipal, agricultural and Industrial wastes — biocompost making methods, types and method of vermicompos ting — field	farming. 2. Learn about organic Fertilizer. 3. Knowing about Recycling of biodegradable wastes. 4. Learn to making of vermicompost and its used.	farming? 2. How recycle biodegradabl e wastes? 3. Write the application of vermicompo st?	
ting – field Application.			

Type	Paper	Unit	Topic	Learning Objectives	Related	Teacher	Teachin
					Questions		g
							Method
							S
				SEMESTER-IV			
CC-4	DSC1D	1.	Plant-water	1.Knowing about	1. Write	G.M.	Lecture
	T(C4T)		relations	Importance of water,	importance of		
	: Plant			water potential and	water in		
	Physiol			its components	leaving organs.		
	ogy			2. Get knowledge	2. What is the		
	and			about Transpiration	significance of		
	Metab			and its significance.	transpiration		
	olism			3. Know about	in plant?		
				Factors affecting	3. Deference		
				transpiration.	between		
				4. Knowledge about	Transpiration		
				Root pressure and	& guttation		
				guttation.			
		2.	Mineral	1. Learn about	1.Define micro	S.M.	Lecture
			nutrition	Essential elements,	and macro		
				macro and	nutrients with		
				micronutrients.	example.		
				2. Knowing Role of	2. Describe the		
				essential elements.	role of		
				3. Get knowledge	essential		

	1	T	I		1	1
			about Transport of ions across cell	elements in plant.		
			membrane	3. Deference		
			4. Learn about active	between		
			and passive	active and		
			transport.	passive		
			transport.	transport.		
	3.	Translocation in	1. Knowing about	1.What is	G.M.	Lecture
	J.	phloem	Composition of	Phloem sap?	G.IVI.	Lecture
		pillocili	phloem sap.	2. Define		
			2. To know Pressure	apoplast		
			flow model.	pathway?		
			3. Get knowledge	patition,		
			about Phloem			
			loading and			
			unloading			
	4.	Photosynthesis	1. Knowing	1. Define	G.M.	Lecture
		,	Photosynthetic	Photosynthesi		
			Pigments (Chl a, b,	s.		
			xanthophylls,	2. What are		
			carotene).	antenna		
			2. Get knowledge	molecules?		
			about Photosystem I	3. Describe		
			and II, reaction	ATP synthesis.		
			center, antenna	4. Write about		
			molecules.	CAM pathway.		
			4. Knowing Electron			
			transport and			
			mechanism of ATP			
			synthesis.			
			4. Knowledge about			
			C3, C4 and CAM			
			pathways of carbon			
			fixation.			
			5. Learn about			
			Photorespiration.			
	5.	Respiration	1. Know about	1. What is	G.M.	Lecture
			Glycolysis, anaerobic	Glycolysis?		
			respiration, TCA	2. Write a		
			cycle.	short note of		
			2. Knowledge about	TCA cycle.		
			Oxidative	3. What is		
			phosphorylation,	PPP?		
			Glyoxylate.			
			3. Learn about			
			Oxidative Pentose			
			Phosphate Pathway.			

	6.	Enzymes	1.Learn about	1.	S.M.	Lecture
			Structure and properties of			
			enzyme.			
			2. Mechanism of			
			enzyme catalysis and			
	7.	Nitrogen	enzyme inhibition. Know about	1.What is Nef	G.M.	Lecture
	, .	metabolism	Biological nitrogen	gen and nod		2000010
			fixation.	gene?		
				2. Name two nitrogen fixing		
				bacteria.		
				3. What is		
				ammonificatio n?		
	8.	Plant growth	Learn about	1.What is	S.M.	Lecture
		regulators	Discovery and physiological roles of	PGRs? 2. Write the		
			auxins, gibberellins,	role of ABA in		
			cytokinin, ABA,	stress		
			ethylene.	condition in plant.		
				3. what is		
				triple response		
	9.	Plant response	1.Learn about	1. What is	S.M.	Lecture
		to light and	Photoperiodism.	vernalization? 2. Describe		
		temperature	2.Knoledge about Phytochromeand	phytochrome.		
			Vernalization.	3. What is		
	_			SDP?		_
DSC- 1DP-	1.	Calculation of stomatal index	Knowledge about Stomatal Index and	Calculate stomatal Index	G.M.	Demons tration
Plant		and stomatal	it's frequency.	of a		Cracion
Physiol		frequency of a		mesophyte		
ogy and		mesophyte and a xerophyte.		plant.		
Metab	2.	Demonstration	Learn about Hill	Demonstratio	P.M.	Demons
olism		of Hill reaction	Reaction.	n of Hill		tration
(Practi	2	Effect of accident	Kaassahasst suudis sa	reaction.	C NA	Daws
cal)	3.	Effect of auxins on rooting.	Know about auxin as PGRs	Demonstratio n of rooting	G.M.	Demons tration
	4.	Determination	Knowing about	Determination	P.M.	Demons
		of osmotic	Plasmolytic	of osmotic		tration
		potential of plant cell sap by	Methods.	potential of plant cell sap		
		piant cen sap by		highr cen sah]

		plasmolytic method.		by plasmolytic method.		
	5.	R.Q.	Knowing about R.Q.	Demonstratio n of R.Q.	P.M.	Demons tratio
SEC2T: Mushr oom Cultur e Techn ology	1.	Introduction	1.To know Nutritional and medicinal value of edible mushrooms. 2. Learn about Poisonous mushrooms. 3. Get knowledge about types of edible mushrooms available in India.	1. How to defer poisonous mushroom from edible one? 2. Describe the nutritional value of mushroom	G.M	Lecture
	2.	Cultivation Technology	 Learn about Cultivation technology. Learn about Mushroom bed preparation. 	Write a note about preparation of mushroom bed.	G.M.	Lecture
	3.	Storage and nutrition	 Gain knowledge about Short-term storage and long- term Storage. Know about the nutritional value of mushroom. 	1.How we store for long time? 2. Write nutritional value of mushroom.	G.M.	Lecture
	4.	Food Preparation	1. Gain knowledge about Types of foods prepared from mushroom. 2. learn Research Centers - National level and regional level. 3. Knowing the Marketing in India and abroad, Export Value.	Which tipes of food prepared from mushroom?	G.M.	Lecture

Туре	Paper	Uni t	Topic	Learning Objectives	Related Questions	Teacher	Teaching Methods
				SEMISTER-V			
	DSE1T: Econo mic Botany and Biotec	1.	Origin of Cultivated Plants	1.Gain Concept of centers of origin. 2. Know their importance with reference to Vavilov's work	Mention the concept of 'Vavilov center of crop origin'	G.M.	Lecture
	hnolog	2.	Cereals	Know about Wheat & its Origin, morphology,uses.	 What are cereals? Write the uses of wheat. 	G.M	Lecture
		3.	Legumes	Gain knowledge with special reference to Gram and soybean	 Give note about Gram. Write the scientific name of soybean 	G.M.	Lecture
		4.	Spices	Learn about clove and black pepper.	1. Write the scientific name and family of clove. 2. Write the uses of black pepper	G.M.	Lecture
		5.	Beverages	Know about morphology, processing and uses of tea	1.What is Oolong tea?2. Discuss the processing of tea	G.M.	Lecture
		6.	Oils and Fats	Learn about groundnut	1.Write down the botanical name of groundnut. 2. Discuss uses of groundnut.	G.M.	Lecture
		7.	Fibre Yielding Plants	Gain knowledge about Botanical name, family, part used, morphology and uses of cotton.	Write down the Family of Cotton. 2. Mention the uses of cotton in daily life of human beings.	G.M.	Lecture
		8.	Introductio n to biotechnol ogy	Knowing about biotechnology and its significance.	1.What is biotechnology?2. Write the uses of biotechnology.	S.M.	Lecture
		9.	Plant tissue culture	 Gain knowledge about Micropropagation. Knowing about haploid production 	1.What is micropropagation? 2. Write the advantage of micropropagation.	S.M.	Lecture

	I			+h.u.a.v.a.h	2 \4/ba+ ia		
				through androgenesis and gynogenesis 3. Learn to brief account of embryo & endosperm culture with their applications	3. What is Totipotency?		
		10.	Recombina nt DNA Techniques	1. Knowing about Blotting techniques. 2. Learn about DNA Fingerprinting. 3. Gain knowledge about molecular DNA markers i.e. RAPD, RFLP, SNPs. 4. Learn about PCR and Reverse Transcriptase-PCR. Hybridoma and monoclonal antibodies, ELISA. 5. Human gene Therapy.	1.Write down a note of Northern blotting. 2. Describe the significance of DNA Fingerprinting. 3. What is DNA marker? 4. Write the full form of RAPD. 5. What is PCR, write it's use. 6.Briefly describe about Humen gene Therapy.	S.M.	Lecture
e r E	DSE1P: Econo mic Botany and	1.	Study of economical ly important plants	Know about sections and microchemical tests of economically important plant	Section the given specimen and write down its characters	G.M.	Demons tration
H	Biotec hnolog Y (Practi cal)	2.	Familiarizat ion with basic equipment s in tissue culture	Learn about tissue culture	Describe tissue culture with basic equipment.	G.M.	Demons tration
		3.	Study through photograph s	Knowing about Anther culture, somatic embryogenesis, endosperm and embryo culture; micropropagation	Describe Anther culture with suitable diagram.	S.M.	Demons tration
		4.	Study of molecular techniques	Learn about PCR, Blotting techniques, AGE and PAGE.	Demonstrate blotting techniques.	S.M.	Demons tration
	SEC3T Floricul	1.	Introductio n	Know about gardening,	1. What is floriculture?	G.M	Lecture

ture			Importance and	2. Write down its		
tare			scope of floriculture	scope.		
	2	Nursery	1.Learn about Sexual	1. How sterilize soil	S.M.	Lecture
	_	Manageme	and vegetative	for nursery?		
		nt and	methods of	2. When we mulching		
		Routine	propagation.	a plant?		
		Garden	knowing Soil	3. Describe the role of		
		Operations	sterilization, Seed	PGRs.		
		Operations	sowing, Planting and	T GRS.		
			Mulching.			
			3. Gain knowledge			
			about Role of plant			
			growth regulators.			
	3.	Ornamenta	1. Learn about	1. Write two names	S.M	Lecture
	J.	l Plants	ornamental trees,	of succulent plant.	3.141	Lecture
			Ornamental bulbous	2. What is		
			and foliage plants.	ornamental tree?		
			2.			
			KnowingCultivation			
			of plants in pots;			
			Indoor gardening;			
			Bonsai.			
	4.	Principles	1.Gain knowledge	1.Describe about	S.M.	Lecture
		of Garden	about English,	Flower beds.		
		Designs	Italian, French,	2. Named some		
			Persian, Mughal and	famous garden in		
			Japanese gardens;	India.		
			Features of a garden.			
			2. Know about Some			
			Famous gardens of			
			India.			
	5.	Landscapin	Learn about	What is landscaping	G.M.	Lecture
		g Places of	Landscaping	Places?		
		Public	highways and			
		Importance	educational			
			institutions.			
	6.	Commercia	1. Learn the Factors	1 How Gerbera and	G.M.	Lecture
		1	affecting flower	Aster are cultivated?		
		Floriculture	production.	2. How factors are		
			2.Know about	affecting on flowering		
			Production and	plant?		
			packaging of cut			
			flowers; Flower			
			arrangements;			
			Methods to prolong			
			vase life.			
			3. Get knowledge			

		about Cultivation of			
		Important cut			
		flowers.			
[·	7. Diseases	Know about	Name some pests of	G.M.	Lecture
	and Pests	ornamental plant	ornamental plant.		
	of	Diseases and its			
	Ornamenta	pests.			
	l Plants.				

Туре	Paper	Unit	Topic	Learning Objectives	Related	Teacher	Teaching
					Question		Methods
				SEMESTER -VI			
	DSE2T: Genetics and Plant Breeding	1.	Heredity	1.Learn brief life history of Mendel and Terminologies 2. Know about Laws of Inheritance, Modified Mendelian Ratios, lethal Genes, Co - dominance, incomplete dominance. 3. Learn about Chi Square, Pedigree Analysis 4. Gain knowledge about Cytoplasmic Inheritance 5.Learn about Multiple allelism, Pleiotropism, Chromosome theory of Inheritance.	1.What is lethal gen? 2. Write down the law of inheritance. 3. Define Co-Dominance and incomplete dominance give example.	G.M.	Lecture
		2.	Sex- determi nation and Sex- linked Inherita nce	Knowing about Sexdetermination.	Write a note about sex linked inheritance.	S.M.	Lecture
		3.	Linkage and crossing over	1.Get concept of linkage, coupling & repulsion. 2. Learn about	1.What is linkage?2. Define coupling and	S.M.	Lecture

	1				T
		recombination	repulsion.		
		frequency, linkage	3. write the		
		maps based on two	significance of		
		and three factor	crossing over.		
		crosses.			
		3. Get knowledge			
		about Crossing over.			
4.	Mutatio	1. Knowing about	1. What is	S.M.	Lecture
	ns and	mutations	mutagen?		
	Chromo	2.Learn about	2. Deference		
	somal	Numerical and	between		
	Aberrati	Structural	Polyploidy		
	ons	chromosomal	and		
		changes.	Aneuploidy		
			3. What is		
			dilation?		
5.	Plant	1. Know about	Define plant	G.M.	Lecture
	Breedin	Breeding systems.	breeding.		
	g	2. Important			
		achievements and			
		undesirable			
		consequences of			
		plant breeding.			
6.	Method	1. Know about	What is	G.M.	Lecture
0.	s of crop	Centres of origin and	Hybridization?	0.171.	Lecture
	improve	domestication of crop	Try briaization:		
	ment	plants.			
	IIICIIC	2. Learn about			
		Selection methods:			
		For self-pollinated,			
		cross pollinated and			
		vegetatively			
		propagated plants.			
		3. Know about			
	0	Hybridization	Defense	C N 4	Lastina
7.	Quantita	Get Concept	Deference	S.M.	Lecture
	tive	ofinheritance,	between		
	inherita	mechanism,	Monogenic vs		
	nce	examples.	polygenic		
<u> </u>			Inheritance.		
8.	Inbreedi	Know about genetic	1.What is	S.M.	Lecture
	ng	basis of inbreeding	Inbreeding		
	depressi	depression and	depression.		
	on and	heterosis;	2. Write the		
	heterosi	Applications.	application of		
	S		heterosis		
9.	Crop	Knowing about Role	Write the role	G.M.	Lecture

T	1			of manufactions :	_r		
			improve	of mutations;	of		
			ment	Polyploidy; Distant	biotechnology		
			and	hybridization and role	in crop		
			breedin	of biotechnology in	improvement.		
			g	crop improvement.			
	DSE2P:	1.	Mendel'	Knowing about	Determine	G.M.	Demonstration
	Genetics		s laws	Probability and chi-	the chi-square		
	and Plant		through	square.	test in		
	Breeding		seed	·	Mendelian		
	(Practical)		ratios.		deviation.		
	,		Laborat		Data supplied		
			ory		by		
			exercise		department.		
			s in		department.		
			probabil				
			ity and				
			chi-				
			square.				
		2.	Incompl	Knowing about	Determine	G.M.	Demonstration
			ete	Incomplete	Incomplete		
			domina	dominance.	dominance		
			nce and		through seed		
			gene		ratios 13:3.		
			interacti				
			on				
			through				
			seed				
			ratios				
			(9:7,				
			9:6:1,				
			-				
			13:3,				
			15:1,				
			12:3:1,				
			9:3:4).		_		
		3.	Study of	Knowing	Write the	G.M.	Demonstration
			aneuploi	aboutDown's,	cause and		
			dy:	Klinefelter's and	symptom		
			Down's,	Turner's syndromes	ofKlinefelter's		
			Klinefelt	for aneuploidy.	syndromes		
			er's and				
			Turner's				
			syndrom				
			es				
			through				
			photogr				
			aphs.				
		4.	Hybridiz	Learn about	Write the	S.M.	Demonstration
		4.	-			J.1VI.	Demonstration
1			ation	hybridization	process of		

		techniq	techniques.	emasculation.		
		ues.	·			
	5.	Inductio	Know about role of	Describe how	S.M.	Demonstration
		n of	polyploidy	polyploidy use		
		polyploi		in yield		
		dy		species.		
		conditio				
		ns in				
		plants.				
SEC4T:	1.	Medicin	Learn about History,	1. Name two	G.M.	Lecture
Medicinal		al Plants	Scope and	medicinal		
Botany			Importance of	plant.		
			Medicinal Plants	2. Define		
				Ayurveda:		
	2.	Conserv	Knowing about	1.What is	S.M.	Lecture
		ation of	Conservation of	conservation?		
		endange	endangered and	2. What is		
		red and	endemic medicinal	endemic and		
		endemic	plants.	endanger		
		medicin		species?		
		al		3. Define In-		
		plants.		situ		
				conservation.		
	3.	Ethnobo	Gain knowledge	1.What is Folk	G.M.	Lecture
		tany and	about Ethnobotany	medicine?		
		Folk	and Folk medicines.	2.Write the		
		medicin		Applications		
		es.		of		
				Ethnobotany.		